BANGALORE WATER SUPPLY AND SEWRAGE BOARD
CAUVERY BHAVAN, KEMPEGOWDA ROAD
BANGALORE - 560 009

Telephone: 91-80-22945106 Fax: 91-80-22945106

Through E-Procurement

TENDER FOR THE WORK OF

TENDER FOR THE WORK OF PROVIDING AND LAYING 900/1200/1400MM DIA RCC NP-3 CLASS SEWER LINE INCLUDING TRENCHLESS TECHNOLOGY METHOD FROM M V GARDEN TO AMARJYOTHI LAYOUT ISPS DOMLURU

Bid Drawings

VOLUME 3 of 4

February – 2023

Office of the *Chief Engineer (WWM)*
BANGALORE WATER SUPPLY & SEWERAGE BOARD
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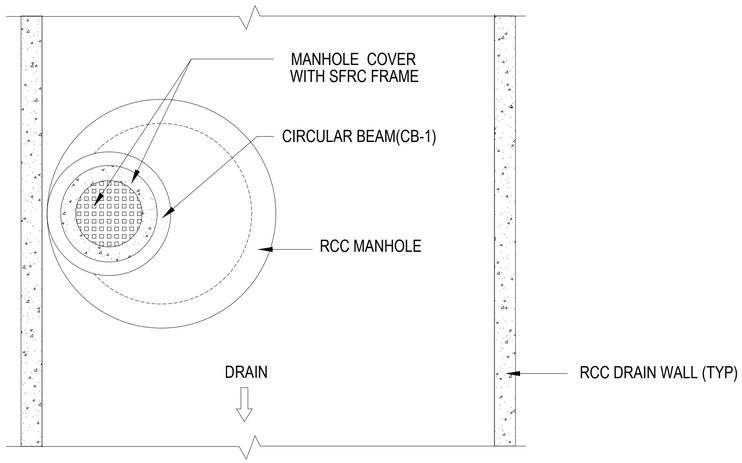
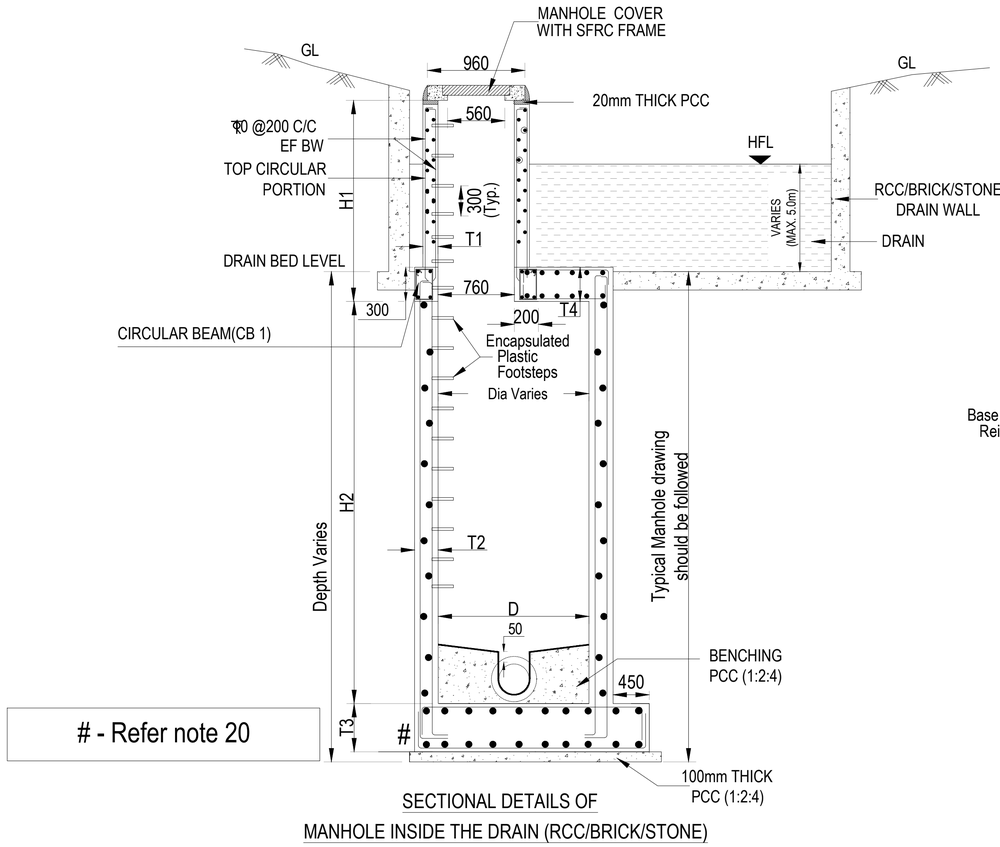
TITLE: STANDARD DETAILS OF R.C.C CAST IN-SITU MANHOLE
1200mm,1500mm,1800mm DIA UPTO 3.0m
1500mm,1800mm DIA UPTO 6m DEPTH (TYPICAL)

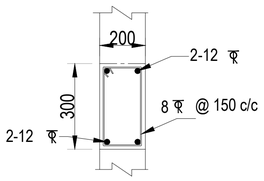
DWG NO



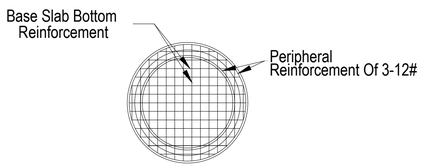
PLAN OF MAN HOLE INSIDE THE DRAIN (RCC)



SECTIONAL DETAILS OF
MANHOLE INSIDE THE DRAIN (RCC/BRICK/STONE)



CIRCULAR BEAM (CB 1)



BASE SLAB-SECTIONAL BOTTOM PLAN

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSION SHALL BE SCALED FROM THE DRAWING.
3. ALL DRAWINGS ARE INTERRELATED AND SHALL BE READ IN CONJUNCTION WITH ONE ANOTHER.
4. GRADE OF CONCRETE MIX SHALL BE M30 CONFIRMING TO I.S 456-2000.
5. ONLY SULPHATE RESISTING CEMENT CONFIRMING TO IS:12330:1988 SHALL BE USED FOR ALL CONCRETING WORKS.
6. ALL REINFORCEMENT BARS SHALL BE HYSD CRS BARS OF GRADE Fe 500 CONFIRMING TO IS:1786.
7. ANY CHANGE IN SBC OF SOIL LESS THAN 12 TON THE DESIGN OF FOUNDATION SHALL BE REVISED AS PER ACTUAL SBC.
8. TOP OF MANHOLE COVER SHALL BE FLUSH WITH FINISHED ROAD LEVEL AND AS DIRECTED BY ENGINEER.
9. IF THE SEWER ROUTE IS PARALLEL TO NALLA/DRAIN/LAKE THEN THE TOP OF MANHOLES SHOULD BE ATLEAST 0.2 m ABOVE THE HFL OF THE NALLA/DRAIN/LAKE OR AS DIRECTED BY THE ENGINEER.
10. WHEREVER THE SEWER ROUTE IS INSIDE THE NALLA, DRAIN BED LEVEL SHALL BE TAKEN FOR THE DESIGN AND THE DEPTH OF MH SHALL BE AS DIRECTED BY THE ENGINEER.
11. PROVISION FOR INCOMING SEWERS, HOUSE SERVICE CONNECTIONS IF ANY SHALL BE PROVIDED.
12. #, DENOTES HYSD BARS
13. 3mm PVC ENCAPSULATE ON 12mm BAR, FOOT STEPS Fe 500
14. PROVISION FOR DROP (FOR DROP ARRANGEMENT) IN MH's SHALL BE PROVIDED AS PER SITE REQUIREMENT AND AS DIRECTED
15. IN CASE OF MANHOLES IN DRAIN/NALLAH, FIXING OF THE TOP OF THE COVER SHALL BE WITH REINFORCEMENT RODS ANCHORD WITH HOOKS ON THE WALLS FOR PROTECTING AGAINST UPLIFT/LIFTING OF THE COVER
16. ADDITIONAL REINFORCEMENT AS PER APPROVED DRAWINGS IN AND ALLROUND PIPE OPENINGS SHALL BE PROVIDED
17. INTERCONNECTION WITH INCOMING & OUTGOING SEWERS INCLUDING FIXING THEM WITH RCC M30 GRADE CONCRETE
18. IN CASE OF CAST IN-SITU MANHOLE TO BE CONSTRUCTED IN ROAD, MANHOLE SHALL BE CONSTRUCTED WITHOUT TOP CIRCULAR PORTION.
19. THE WORK SHALL BE DONE AS PER BOQ, SPECIFICATIONS AND CONTRACT PROVISIONS.
20. GAP TO MATCH FORMWORK AT SITE (50-75mm).

TABLE - 1
DIMENSION DETAILS OF MANHOLE

SL.No	(Dia of Manhole) in 'mm'	(Wall height) in 'mm'	(Wall thickness) in 'mm'	(Wall thickness) in 'mm'	(Base Slab thickness) in 'mm'	(Roof Slab thickness) in 'mm'
	D	H2	T1	T2	T3	T4
1	1200	upto 3000	150	200	200	300
2	1500					
3	1800					

TABLE - 2
REINFORCEMENT DETAILS OF MANHOLE

SL.No	(Dia of Manhole) in 'mm'	(Wall height) in 'mm'	Base Slab Reinforcement (a)	Wall Reinforcement: Hoop Reinforcement (c) upto half the height (h) from the bottom	Wall Reinforcement: Hoop Reinforcement (c) Top half the height (h)	Wall Reinforcement: Longitudinal Reinforcement (b)	Roof Slab Reinforcement (a)
	D	H2					
1	1200	upto 3000	10#@200c/c	10#@200c/c	10#@200c/c	10#@200c/c	10#@200c/c
2	1500		10#@200c/c	10#@180c/c	10#@180c/c	10#@180c/c	10#@200c/c
3	1800		12#@200 c/c	12#@200 c/c	12#@200 c/c	12#@200c/c	12#@200 c/c

DO NOT SCALE

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BANGALORE WATER SUPPLY AND SEWERAGE BOARD
CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT FOR THE WORK OF PROVIDING AND LAYING 900/1200/1400mm DIA RCC NP-3 CLASS SEWER LINE INCLUDING TRENCHLESS TECHNOLOGY METHOD FROM M V GARDEN TO AMARJYOTHI LAYOUT ISPS DOMLURU.

TITLE: STANDARD DETAILS OF R.C.C CAST IN-SITU MANHOLE
1200mm,1500mm,1800mm DIA UPTO 3.0m
1500mm,1800mm DIA UPTO 6m DEPTH (TYPICAL)

TENDER PURPOSE ONLY

SCALE	: AS SHOWN	DWG NO.	ISSUE
DC & DISC	: BLR & CV		P0

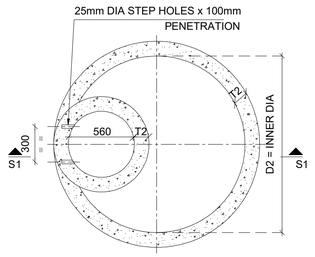
SIZE-A1

FILE NAME: F-091-Rev-R1.dwg

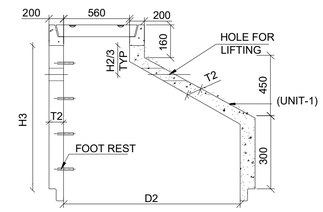
TCE FORM NO. 091 R1

DWG NO

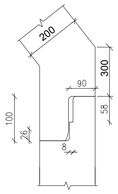
TITLE: RCC PRECAST SEWER MANHOLE DETAILS 2400mm DIA (TYPICAL) FOR DEPTH UPTO 3.0M



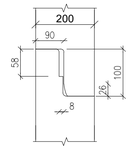
1 PLAN AT MANHOLE TOP LVL
SCALE : NTS



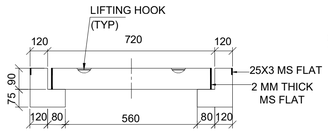
3 DETAIL OF SEGMENT - H3(UNIT-1)
SCALE : NTS



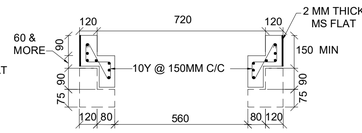
DETAIL OF 'Y'
TYP.JOINING DETAILS OF 2400 DIA PRECAST SEGMENT



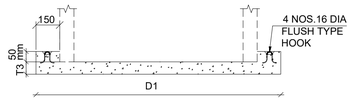
DETAILS OF 'Z'
TYP.JOINING DETAILS OF 2400 DIA PRECAST SEGMENT



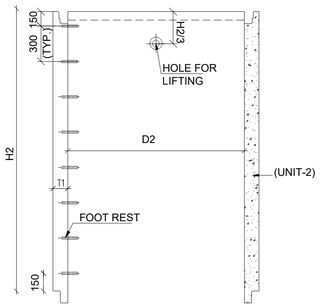
DETAIL OF 'X'
HD-20 MANHOLE COVER



ADDITIONAL MANHOLE HEIGHT TO MATCH FINISHED ROAD LEVEL



DETAILS OF BASE SLAB



4 DETAIL OF SEGMENT - H2(UNIT-2)
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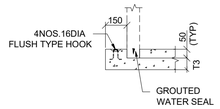
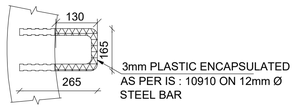


DETAIL OF 'U'



TYPICAL PLASTIC ENCAPSULATED FOOT REST DETAILS

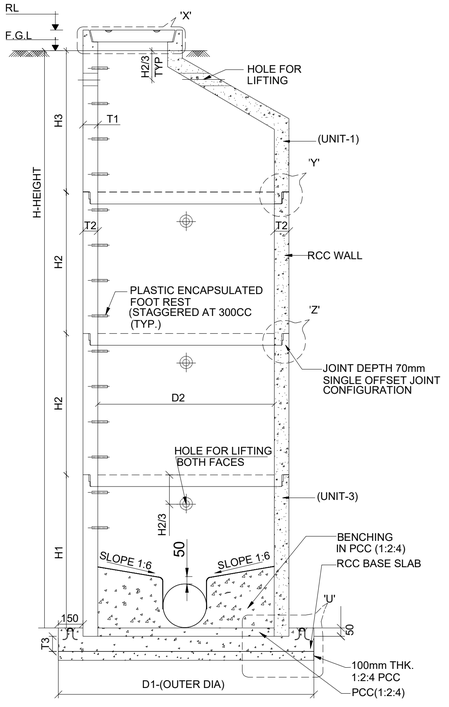
STANDARD DATA FOR PRECAST MANHOLE							
1	**BASE SECTION**						PROVISION
a)	SIZE(DIAMETER) IN mm						2400
b)	DIA WISE DIMENSIONS						
	INNER DIA OF BASE(D2) (mm)	WALL THK.(T1) (mm)	WALL THK.(T2) (mm)	JOINT DEPTH (mm)	BASE THK.(T3) (mm)	OUTER DIA OF BASE(D1) (mm)	HEIGHT
	2400	200	200	50	250	3100	UPTO 3m
c)	AVAILABLE HEIGHT FOR BASE IN MM(H1)						300 TO 700 OR AS REQUIRED
d)	HOLES FOR SEWER CONNECTIONS						100mmØ MORE THAN OUTER Ø OF SEWER
e)	A)MAT CONCRETE THICKNESS IN MM & MIX						100mmTHICK,1:2:4 MIX
	B)CONCRETE MIX FOR WALL AND BASE						RCC M30 GRADE
f)	CONCRETE FILL FOR BENCHING						1:2:4, MIX WITH 1:6 SLOPE
g)	REINFORCEMENT						
	a)FOR BASE SLAB						AS PER RC DETAIL
	b)FOR WALL						AS PER RC DETAIL
2	**RISER SECTION**						
a)	AVAILABLE HEIGHT FOR RISER SECTION (H2)						300 TO 900 OR AS REQUIRED
b)	WALL THICKNESS IN MM						200mm
c)	JOINT THICKNESS AND JOINT MATERIAL						SAME AS BASE SECTION
d)	REINFORCEMENT IN THE WALL						AS PER DETAIL DRG.
3	**ECCENTRIC CONE SECTION**						
a)	SHAPE						ECCENTRIC CONE
b)	CONCRETE FILL AROUND SEWER						1:1.5:3MIX
c)	THICKNESS(T2)						200mm
d)	REINFORCEMENT						AS PER DETAIL DRG.
e)	TOP OPENING						560mm
f)	JOINT DEPTH						AS PER DETAIL DRG.
4	**STANDARD MANHOLE FRAME AND COVER**						AS PER IS 12592-2002
a)	SHAPE						FLAT
b)	COVER SIZE						560mm
c)	SPECIFICATION						HD-20

NOTE:

1. ALL DIMENTIONS ARE IN mm AND ALL LEVELS ARE IN METER.
2. THE LIFTING HOLES SHALL BE FILLED WITH CONCRETE 1:1.5:3 MIX.
3. 3mm PVC ENCAPSULATE ON 12mm BAR, FOOT STEPS Fe 500.
4. THE NON CORE OPENING SHALL BE 100mm GREATER THAN THE OUTER DIA OF SEWER
5. SINGLE OFFSET JOINT CONFIGURATION SHALL BE ADOPTED AT THE JOINT.
6. THE JOINT SHALL BE SEALED WITH NON SHRINK GROUT/SINGLE RUBBER SEAL SHALL BE PROVIDED IN PRECAST UNITS.RUBBER GASKET SHALL BE AS PER IS 5382.
7. 150mm LIP IS OPTIONAL UNLESS OTHERWISE NOTED.
8. GRADE OF CONCRETE SHALL BE RCC M30 MIX FOR MANHOLE WALL AND FOR BASE SLAB WITH SULPHATE RESISTANCE CEMENT.
9. ALL REINFORCEMENT BARS SHALL BE HYSD CRS BARS OF GRADE Fe 500 CONFORMING TO IS:1786.
10. CLEAR COVER TO MAIN REINFORCEMENT SHALL BE:
    a)WALL SOIL SEWAGE FACE=50mm
    b)BASE SLAB =50mm
11. THIS DRAWING IS ONLY TYPICAL CONSTRUCTION DRAWING. THE CONTRACTOR HAS TO TAKE PRIOR APPROVAL TO THE PROCESS OF MANUFACTURE OF THE PRECAST MANHOLE.
12. NET SAFE BEARING CAPACITY IS ASSUMED TO BE 10 TON/Sq.m. IF LOWER SBC ENCOUNTERED, THE BASE SLAB THICKNESS SHALL BE INCREASED AS PER DIRECTION OF ENGINEER.
13. PRE CAST FRAME AND COVER AS PER IS:12592-2002.
14. LOWEST FOOT REST SHALL NOT BE MORE THAN 300mm ABOVE BENCHING.
15. FOR MINIMUM DEPTH-MANHOLES(1.25m), WHEREVER OCCURS,THE CONICAL SECTION AND THE RISER SEGMENT (H1) MAY BE CAST AS A SINGLE UNIT BASED ON THE SITE CONDITIONS.
16. PROVISION FOR INCOMING SEWERS, HOUSE SERVICE CONNECTIONS IF ANY SHALL BE PROVIDED
17. PROVISION FOR DROP (FOR DROP ARRANGEMENT) IN MH's SHALL BE PROVIDED AS PER SITE REQUIREMENT AND AS DIRECTED
18. INCASE OF HIGHER DIAMETER PIPES, PROVISION FOR THE INCOMING AND OUTGOING SEWERS MAY BE PROVIDED IN TWO PRECAST MEMEBERS OR HEIGHT OF THE BOTTOM PRECAST MEMBERS MAY BE INCREASED
19. ADDITION REINFORCEMENT AS PER APPROVED DRAWINGS IN AND ALLROUND PIPE OPENINGS SHALL BE PROVIDED
20. INTERCONNECTION WITH INCOMING & OUTGOING SEWERS INCLUDING FIXING THEM WITH RCC M30 GRADE CONCRETE
21. THE WORK SHALL BE DONE AS PER BOQ, SPECIFICATIONS AND CONTRACT PROVISIONS.

LEGEND:

FGL -FINISHED GROUND LEVEL
RL -ROAD LEVEL
LVL -LEVEL
THK. -THICKNESS
TYP. -TYPICAL
BW - BOTH WAYS
BF -BOTH FACES



2 SECTION S1-S1
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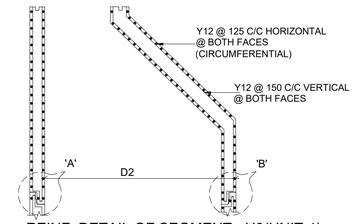
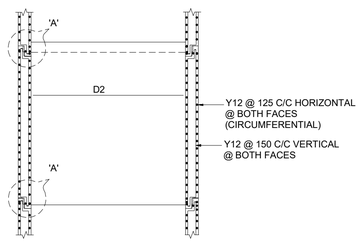


5 REINF. DETAIL OF SEGMENT - H3(UNIT-1)
SCALE : NTS



6 REINF. DETAIL OF SEGMENT - H2(UNIT-2)
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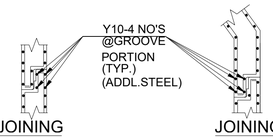
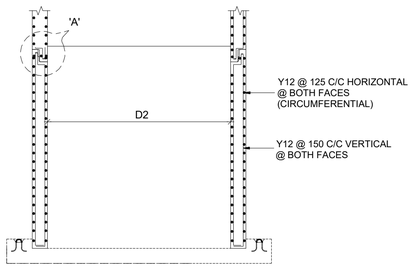


JOINING DETAIL - 'A'

JOINING DETAIL - 'B'



7 REINF. DETAIL OF SEGMENT - H1(UNIT-3)
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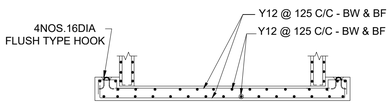

8 REINF. DETAIL OF BASE SLAB
SCALE : NTS

DO NOT SCALE

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FILE NAME :13370A-CV-3009-Rev-P0

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		CLEARED											

BANGALORE WATER SUPPLY AND SEWERAGE BOARD

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT FOR THE WORK OF PROVIDING AND LAYING 900/1200/1400mm DIA RCC NP-3 CLASS SEWER LINE INCLUDING TRENCHLESS TECHNOLOGY METHOD FROM M V GARDEN TO AMARJYOTHI LAYOUT ISPS DOMLURU

TITLE: RCC PRECAST SEWER MANHOLE DETAILS 2400mm DIA (TYPICAL) FOR DEPTH UPTO 3.0M

TENDER PURPOSE ONLY

SCALE : AS SHOWN	DWG NO.	ISSUE
DC & DISC: BLR & CV		P0

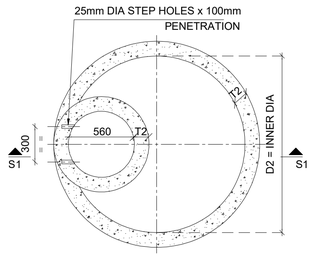
SIZE-A1

FILE NAME: F-091-Rev-R1.dwg

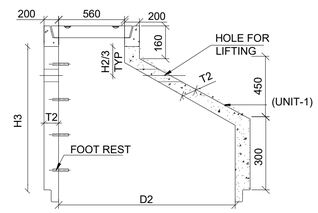
TCE FORM NO. 091 R1

DWG NO

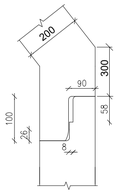
TITLE: RCC PRECAST SEWER MANHOLE DETAILS 1800mm DIA (TYPICAL) FOR DEPTH UPTO 3.0M



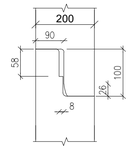
1 PLAN AT MANHOLE TOP LVL
SCALE : NTS



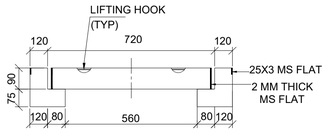
3 DETAIL OF SEGMENT - H3(UNIT-1)
SCALE : NTS



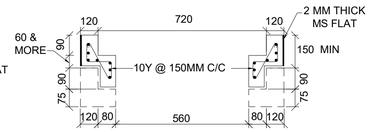
DETAIL OF 'Y'
TYP.JOINING DETAILS OF 1800 DIA PRECAST SEGMENT



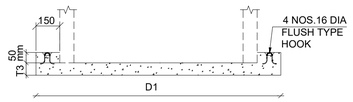
DETAILS OF 'Z'
TYP.JOINING DETAILS OF 1800 DIA PRECAST SEGMENT



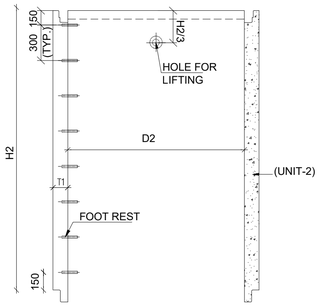
DETAIL OF 'X'
HD-20 MANHOLE COVER



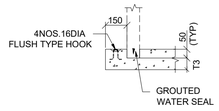
ADDITIONAL MANHOLE HEIGHT TO MATCH FINISHED ROAD LEVEL



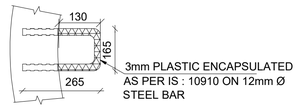
DETAILS OF BASE SLAB



4 DETAIL OF SEGMENT - H2(UNIT-2)
SCALE : NTS



DETAIL OF 'U'



TYPICAL PLASTIC ENCAPSULATED FOOT REST DETAILS

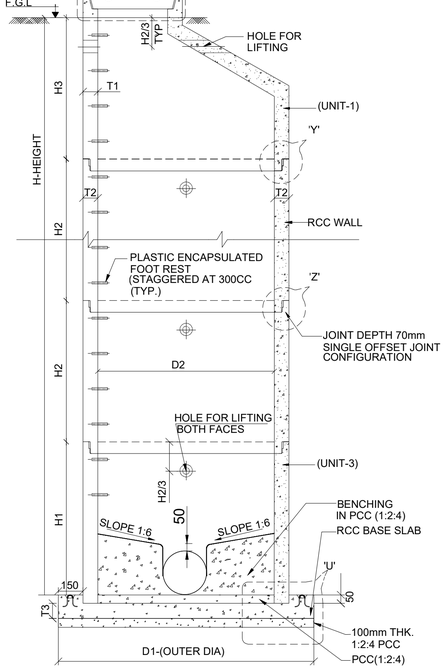
STANDARD DATA FOR PRECAST MANHOLE								
1	**BASE SECTION**							PROVISION
a)	SIZE(DIAMETER) IN mm							1800
b)	DIA WISE DIMENSIONS							
	INNER DIA OF BASE(D2) (mm)	WALL THK.(T1) (mm)	WALL THK.(T2) (mm)	JOINT DEPTH (mm)	BASE THK.(T3) (mm)	OUTER DIA OF BASE(D1) (mm)	HEIGHT	
	1800	200	200	50	300	2500	UPTO 3m	
c)	AVAILABLE HEIGHT FOR BASE IN MM(H1)							300 TO 700 OR AS REQUIRED
d)	HOLES FOR SEWER CONNECTIONS							100mmØ MORE THAN OUTER Ø OF SEWER
e)	A)MAT CONCRETE THICKNESS IN MM & MIX							100mmTHICK,1:2:4 MIX
	B)CONCRETE MIX FOR WALL AND BASE							RCC M30 GRADE
f)	CONCRETE FILL FOR BENCHING							1:2:4, MIX WITH 1:6 SLOPE
g)	REINFORCEMENT							
	a)FOR BASE SLAB							AS PER RC DETAIL
	b)FOR WALL							AS PER RC DETAIL
2	**RISER SECTION**							
a)	AVAILABLE HEIGHT FOR RISER SECTION (H2)							300 TO 900 OR AS REQUIRED
b)	WALL THICKNESS IN MM							200mm
c)	JOINT THICKNESS AND JOINT MATERIAL							SAME AS BASE SECTION
d)	REINFORCEMENT IN THE WALL							AS PER DETAIL DRG.
3	**ECCENTRIC CONE SECTION**							
a)	SHAPE							ECCENTRIC CONE
b)	CONCRETE FILL AROUND SEWER							1:1.5:3MIX
c)	THICKNESS(T2)							200mm
d)	REINFORCEMENT							AS PER DETAIL DRG.
e)	TOP OPENING							560mm
f)	JOINT DEPTH							AS PER DETAIL DRG.
4	**STANDARD MANHOLE FRAME AND COVER**							AS PER IS 12592-2002
a)	SHAPE							FLAT
b)	COVER SIZE							560mm
c)	SPECIFICATION							HD-20

NOTE:

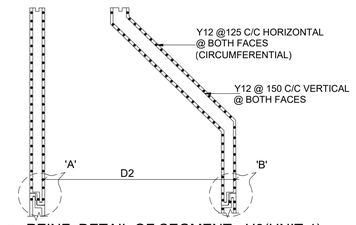
1. ALL DIMENTIONS ARE IN mm AND ALL LEVELS ARE IN METER.
2. THE LIFTING HOLES SHALL BE FILLED WITH CONCRETE 1:1.5:3 MIX.
3. 3mm PVC ENCAPSULATE ON 12mm BAR, FOOT STEPS Fe 500.
4. THE NON CORE OPENING SHALL BE 100mm GREATER THAN THE OUTER DIA OF SEWER
5. SINGLE OFFSET JOINT CONFIGURATION SHALL BE ADOPTED AT THE JOINT.
6. THE JOINT SHALL BE SEALED WITH NON SHRINK GROUT/SINGLE RUBBER SEAL SHALL BE PROVIDED IN PRECAST UNITS.RUBBER GASKET SHALL BE AS PER IS 5382.
7. 150mm LIP IS OPTIONAL UNLESS OTHERWISE NOTED.
8. GRADE OF CONCRETE SHALL BE RCC M30 MIX FOR MANHOLE WALL AND FOR BASE SLAB WITH SULPHATE RESISTANCE CEMENT.
9. ALL REINFORCEMENT BARS SHALL BE HYSD CRS BARS OF GRADE Fe 500 CONFORMING TO IS:1786.
10. CLEAR COVER TO MAIN REINFORCEMENT SHALL BE:
    a)WALL SOIL SEWAGE FACE=50mm
    b)BASE SLAB =50mm
11. THIS DRAWING IS ONLY TYPICAL CONSTRUCTION DRAWING. THE CONTRACTOR HAS TO TAKE PRIOR APPROVAL TO THE PROCESS OF MANUFACTURE OF THE PRECAST MANHOLE.
12. NET SAFE BEARING CAPACITY IS ASSUMED TO BE 10 TON/Sq.m. IF LOWER SBC ENCOUNTERED, THE BASE SLAB THICKNESS SHALL BE INCREASED AS PER DIRECTION OF ENGINEER.
13. PRE CAST FRAME AND COVER AS PER IS:12592-2002.
14. LOWEST FOOT REST SHALL NOT BE MORE THAN 300mm ABOVE BENCHING.
15. FOR MINIMUM DEPTH-MANHOLES(1.25m), WHEREVER OCCURS,THE CONICAL SECTION AND THE RISER SEGMENT (H1) MAY BE CAST AS A SINGLE UNIT BASED ON THE SITE CONDITIONS.
16. PROVISION FOR INCOMING SEWERS, HOUSE SERVICE CONNECTIONS IF ANY SHALL BE PROVIDED
17. PROVISION FOR DROP (FOR DROP ARRANGEMENT) IN MH's SHALL BE PROVIDED AS PER SITE REQUIREMENT AND AS DIRECTED
18. INCASE OF HIGHER DIAMETER PIPES, PROVISION FOR THE INCOMING AND OUTGOING SEWERS MAY BE PROVIDED IN TWO PRECAST MEMEBERS OR HEIGHT OF THE BOTTOM PRECAST MEMBERS MAY BE INCREASED
19. ADDITION REINFORCEMENT AS PER APPROVED DRAWINGS IN AND ALLROUND PIPE OPENINGS SHALL BE PROVIDED
20. INTERCONNECTION WITH INCOMING & OUTGOING SEWERS INCLUDING FIXING THEM WITH RCC M30 GRADE CONCRETE
21. THE WORK SHALL BE DONE AS PER BOQ, SPECIFICATIONS AND CONTRACT PROVISIONS.

LEGEND:

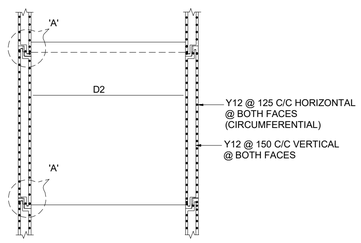
FGL -FINISHED GROUND LEVEL
RL -ROAD LEVEL
LVL -LEVEL
THK. -THICKNESS
TYP. -TYPICAL
BW - BOTH WAYS
BF -BOTH FACES



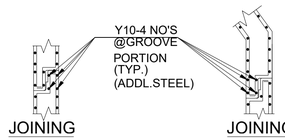
2 SECTION S1-S1
SCALE : NTS



5 REINF. DETAIL OF SEGMENT - H3(UNIT-1)
SCALE : NTS

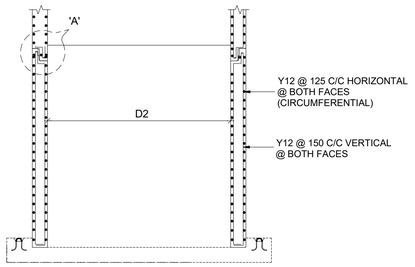


6 REINF. DETAIL OF SEGMENT - H2(UNIT-2)
SCALE : NTS

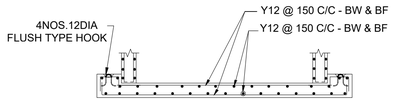


JOINING DETAIL - 'A'

JOINING DETAIL - 'B'



7 REINF. DETAIL OF SEGMENT - H1(UNIT-3)
SCALE : NTS



8 REINF. DETAIL OF BASE SLAB
SCALE : NTS

DO NOT SCALE

'P' (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION BUT ARE ISSUED FOR LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL BLOCK ABOVE THIS BLOCK.

CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R' (RELEASED) ISSUES ONLY.

INFORMATION CONTAINED WITHIN 'HOLD' IS NOT RELEASED FOR CONSTRUCTION / FABRICATION. FIELD MUST GET DESIGN OFFICE TO CLEAR 'HOLDS' IN TIME BEFORE PROCEEDING WITH ANY CONSTRUCTION / FABRICATION WORK RELATED TO 'HOLDS'.

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FILE NAME :13370A-CV-3009-Rev-P0

	SIGN.											
	INITIALS											
	REVISIONS											
P0	SIGN.											11-12-2023
	INITIALS	SGS	XX	XX						XX	XX	
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME	CLEARED	PE/PM	APPD	DATE

BANGALORE WATER SUPPLY AND SEWERAGE BOARD
CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT FOR THE WORK OF PROVIDING AND LAYING 900/1200/1400mm DIA RCC NP-3 CLASS SEWER LINE INCLUDING TRENCHLESS TECHNOLOGY METHOD FROM M V GARDEN TO AMARJYOTHI LAYOUT ISPS DOMLURU

TITLE: RCC PRECAST SEWER MANHOLE DETAILS 1800mm DIA (TYPICAL) FOR DEPTH UPTO 3.0M

TENDER PURPOSE ONLY

SCALE	: AS SHOWN	DWG NO.	ISSUE
DC & DISC	: BLR & CV		P0

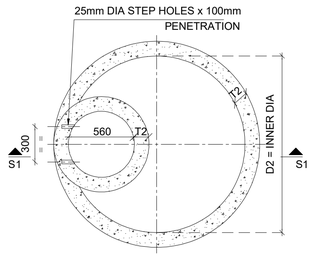
SIZE-A1

FILE NAME: F-091-Rev-R1.dwg

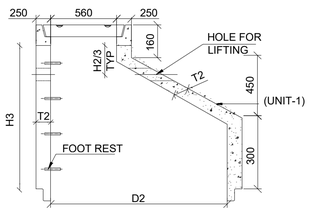
TCE FORM NO. 091 R1

DWG NO

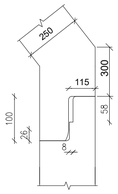
TITLE: RCC PRECAST SEWER MANHOLE DETAILS 2400mm DIA (TYPICAL) FOR DEPTH UPTO 6.0M



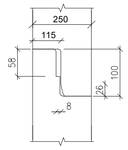
1 PLAN AT MANHOLE TOP LVL
SCALE : NTS



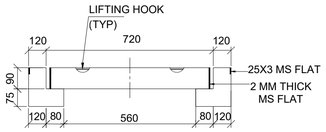
3 DETAIL OF SEGMENT - H3(UNIT-1)
SCALE : NTS



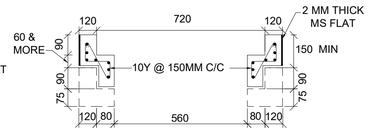
DETAIL OF 'Y'
TYP.JOINING DETAILS OF 2400 DIA PRECAST SEGMENT



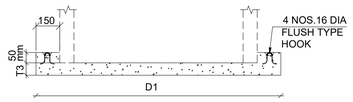
DETAILS OF 'Z'
TYP.JOINING DETAILS OF 2400 DIA PRECAST SEGMENT



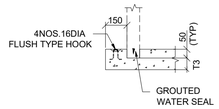
DETAIL OF 'X'
HD-20 MANHOLE COVER



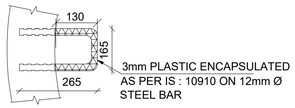
ADDITIONAL MANHOLE HEIGHT TO MATCH FINISHED ROAD LEVEL



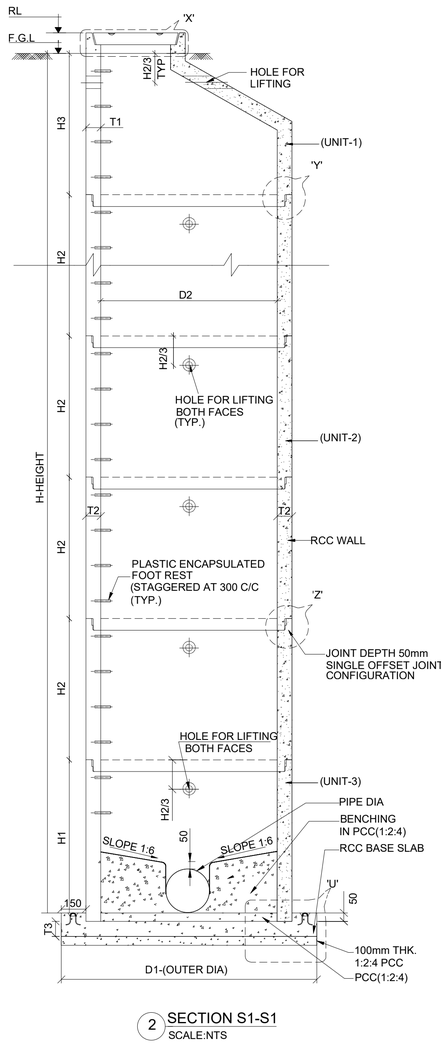
DETAILS OF BASE SLAB



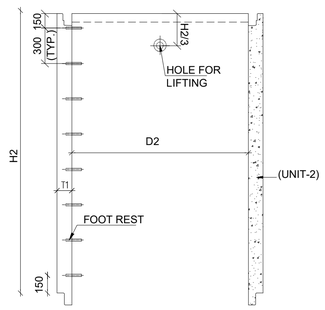
DETAIL OF 'U'



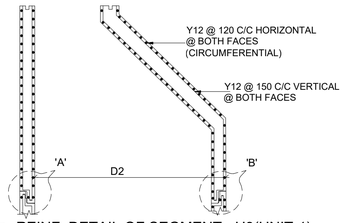
TYPICAL PLASTIC ENCAPSULATED FOOT REST DETAILS



2 SECTION S1-S1
SCALE:NTS



4 DETAIL OF SEGMENT - H2(UNIT-2)
SCALE : NTS



5 REINF. DETAIL OF SEGMENT - H3(UNIT-1)
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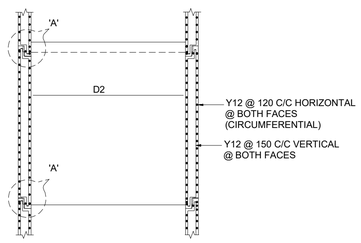
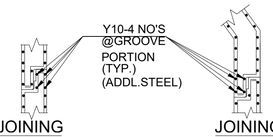
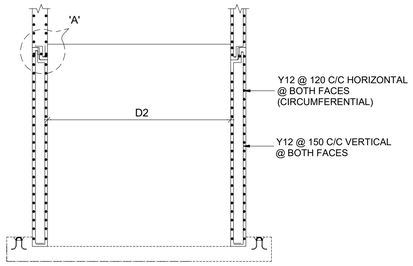


6 REINF. DETAIL OF SEGMENT - H2(UNIT-2)
SCALE : NTS

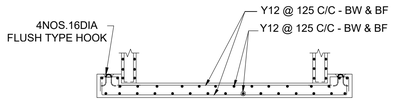


JOINING DETAIL - 'A'

JOINING DETAIL - 'B'



7 REINF. DETAIL OF SEGMENT - H1(UNIT-3)
SCALE : NTS



8 REINF. DETAIL OF BASE SLAB
SCALE : NTS

STANDARD DATA FOR PRECAST MANHOLE							
1	**BASE SECTION**						PROVISION
a)	SIZE(DIAMETER) IN mm						2400
b)	DIA WISE DIMENSIONS						
	INNER DIA.OF BASE(D2) (mm)	WALL THK.(T1) (mm)	WALL THK.(T2) (mm)	JOINT DEPTH (mm)	BASE THK.(T3) (mm)	OUTER DIA.OF BASE(D1) (mm)	HEIGHT
	2400	250	250	50	300	3200	UPTO 6m
c)	AVAILABLE HEIGHT FOR BASE IN MM(H1)						300 TO 700 OR AS REQUIRED
d)	HOLES FOR SEWER CONNECTIONS						100mmØ MORE THAN OUTER Ø OF SEWER
e)	A)MAT CONCRETE THICKNESS IN MM & MIX						100mmTHICK,1:2:4 MIX
	B)CONCRETE MIX FOR WALL AND BASE						RCC M30 GRADE
f)	CONCRETE FILL FOR BENCHING						1:2:4, MIX WITH 1:6 SLOPE
g)	REINFORCEMENT						
	a)FOR BASE SLAB						AS PER RC DETAIL
	b)FOR WALL						AS PER RC DETAIL
2	**RISER SECTION**						
a)	AVAILABLE HEIGHT FOR RISER SECTION (H2)						300 TO 900 OR AS REQUIRED
b)	WALL THICKNESS IN MM						250mm
c)	JOINT THICKNESS AND JOINT MATERIAL						SAME AS BASE SECTION
d)	REINFORCEMENT IN THE WALL						AS PER DETAIL DRG.
3	**ECCENTRIC CONE SECTION**						
a)	SHAPE						ECCENTRIC CONE
b)	CONCRETE FILL AROUND SEWER						1:1.5:3MIX
c)	THICKNESS(T2)						250mm
d)	REINFORCEMENT						AS PER DETAIL DRG.
e)	TOP OPENING						560mm
f)	JOINT DEPTH						AS PER DETAIL DRG.
4	**STANDARD MANHOLE FRAME AND COVER**						AS PER IS 12592-2002
a)	SHAPE						FLAT
b)	COVER SIZE						560mm
c)	SPECIFICATION						HD-20

NOTE:

1. ALL DIMENTIONS ARE IN mm AND ALL LEVELS ARE IN METER.
2. THE LIFTING HOLES SHALL BE FILLED WITH CONCRETE 1:1.5:3 MIX.
3. 3mm PVC ENCAPSULATE ON 12mm BAR, FOOT STEPS Fe 500.
4. THE NON CORE OPENING SHALL BE 100mm GREATER THAN THE OUTER DIA OF SEWER
5. SINGLE OFFSET JOINT CONFIGURATION SHALL BE ADOPTED AT THE JOINT.
6. THE JOINT SHALL BE SEALED WITH NON SHRINK GROUT/SINGLE RUBBER SEAL SHALL BE PROVIDED IN PRECAST UNITS.RUBBER GASKET SHALL BE AS PER IS 5382.
7. 150mm LIP IS OPTIONAL UNLESS OTHERWISE NOTED.
8. GRADE OF CONCRETE SHALL BE RCC M30 MIX FOR MANHOLE WALL AND FOR BASE SLAB WITH SULPHATE RESISTANCE CEMENT.
9. ALL REINFORCEMENT BARS SHALL BE HYSD CRS BARS OF GRADE Fe 500 CONFORMING TO IS:1786.
10. CLEAR COVER TO MAIN REINFORCEMENT SHALL BE:
    a)WALL SOIL SEWAGE FACE=50mm
    b)BASE SLAB =50mm
11. THIS DRAWING IS ONLY TYPICAL CONSTRUCTION DRAWING. THE CONTRACTOR HAS TO TAKE PRIOR APPROVAL TO THE PROCESS OF MANUFACTURE OF THE PRECAST MANHOLE.
12. NET SAFE BEARING CAPACITY IS ASSUMED TO BE 10 TON/Sq.m. IF LOWER SBC ENCOUNTERED, THE BASE SLAB THICKNESS SHALL BE INCREASED AS PER DIRECTION OF ENGINEER.
13. PRE CAST FRAME AND COVER AS PER IS:12592-2002.
14. LOWEST FOOT REST SHALL NOT BE MORE THAN 300mm ABOVE BENCHING.
15. FOR MINIMUM DEPTH-MANHOLES(1.25m), WHEREVER OCCURS,THE CONICAL SECTION AND THE RISER SEGMENT (H1) MAY BE CAST AS A SINGLE UNIT BASED ON THE SITE CONDITIONS.
16. PROVISION FOR INCOMING SEWERS, HOUSE SERVICE CONNECTIONS IF ANY SHALL BE PROVIDED
17. PROVISION FOR DROP (FOR DROP ARRANGEMENT) IN MH's SHALL BE PROVIDED AS PER SITE REQUIREMENT AND AS DIRECTED
18. INCASE OF HIGHER DIAMETER PIPES, PROVISION FOR THE INCOMING AND OUTGOING SEWERS MAY BE PROVIDED IN TWO PRECAST MEMEBERS OR HEIGHT OF THE BOTTOM PRECAST MEMBERS MAY BE INCREASED
19. ADDITION REINFORCEMENT AS PER APPROVED DRAWINGS IN AND ALLROUND PIPE OPENINGS SHALL BE PROVIDED
20. INTERCONNECTION WITH INCOMING & OUTGOING SEWERS INCLUDING FIXING THEM WITH RCC M30 GRADE CONCRETE
21. THE WORK SHALL BE DONE AS PER BOQ, SPECIFICATIONS AND CONTRACT PROVISIONS.

LEGEND:

FGL -FINISHED GROUND LEVEL
RL -ROAD LEVEL
LVL -LEVEL
THK. -THICKNESS
TYP. -TYPICAL
BW - BOTH WAYS
BF -BOTH FACES

DO NOT SCALE

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FILE NAME :13370A-CV-3009-Rev-P0

	SIGN.												
	INITIALS												
	REVISIONS												
PO	SIGN.												19-12-2023
	INITIALS	SGS	XX	XX						XX	XX		
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME		PE/PM	APPD	DATE	
		CLEARED											

BANGALORE WATER SUPPLY AND SEWERAGE BOARD

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT FOR THE WORK OF PROVIDING AND LAYING 900/1200/1400mm DIA RCC NP-3 CLASS SEWER LINE INCLUDING TRENCHLESS TECHNOLOGY METHOD FROM M V GARDEN TO AMARJYOTHI LAYOUT ISPS DOMLURU

TITLE: RCC PRECAST SEWER MANHOLE DETAILS 2400mm DIA (TYPICAL) FOR DEPTH UPTO 6.0M

TENDER PURPOSE ONLY

SCALE : AS SHOWN	DWG NO.	ISSUE
DC & DISC : BLR & CV		P0

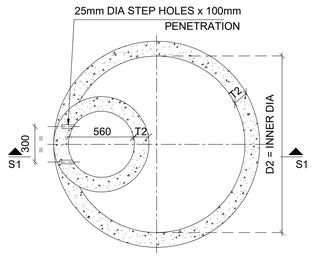
SIZE-A1

FILE NAME: F-091-Rev-R1.dwg

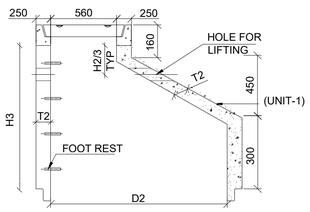
TCE FORM NO. 091 R1

TITLE: RCC PRECAST SEWER MANHOLE DETAILS 1800mm DIA (TYPICAL) FOR DEPTH UPTO 6.0M

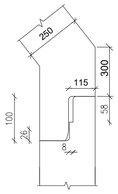
DWG NO



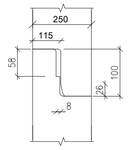
1 PLAN AT MANHOLE TOP LVL
SCALE : NTS



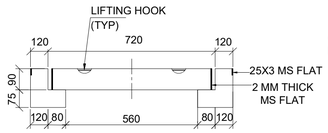
3 DETAIL OF SEGMENT - H3(UNIT-1)
SCALE : NTS



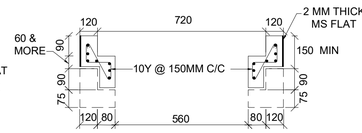
DETAIL OF 'Y'
TYP.JOINING DETAILS OF 1800 DIA PRECAST SEGMENT



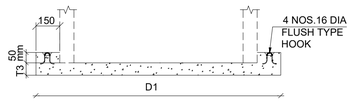
DETAILS OF 'Z'
TYP.JOINING DETAILS OF 1800 DIA PRECAST SEGMENT



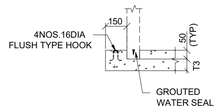
DETAIL OF 'X'
HD-20 MANHOLE COVER



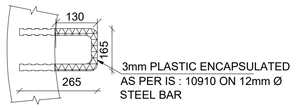
ADDITIONAL MANHOLE HEIGHT
TO MATCH FINISHED ROAD LEVEL



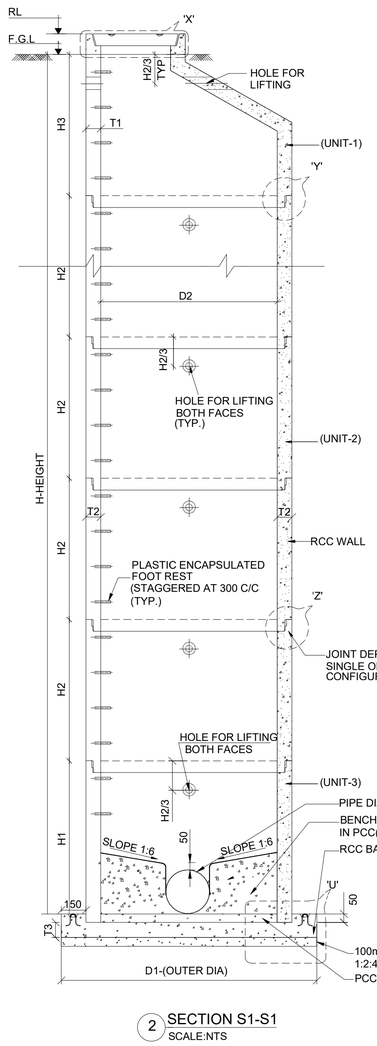
DETAILS OF BASE SLAB



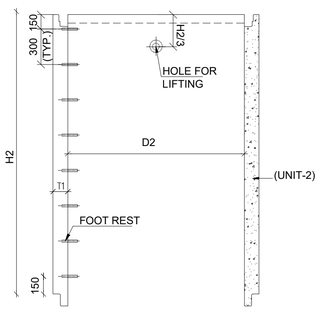
DETAIL OF 'U'



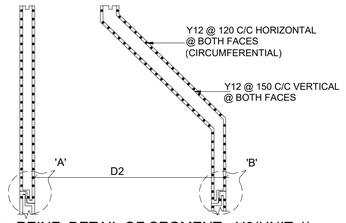
TYPICAL PLASTIC ENCAPSULATED FOOT REST DETAILS



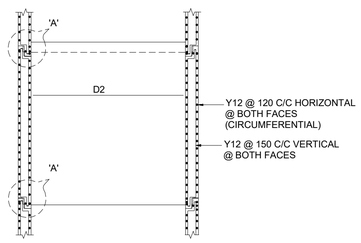
2 SECTION S1-S1
SCALE:NTS



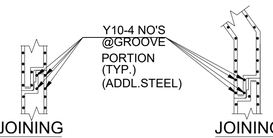
4 DETAIL OF SEGMENT - H2(UNIT-2)
SCALE : NTS



5 REINF. DETAIL OF SEGMENT - H3(UNIT-1)
SCALE : NTS

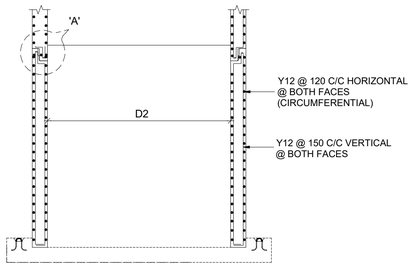


6 REINF. DETAIL OF SEGMENT - H2(UNIT-2)
SCALE : NTS

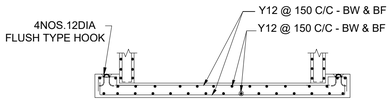


JOINING DETAIL - 'A'

JOINING DETAIL - 'B'



7 REINF. DETAIL OF SEGMENT - H1(UNIT-3)
SCALE : NTS



8 REINF. DETAIL OF BASE SLAB
SCALE : NTS

STANDARD DATA FOR PRECAST MANHOLE								
1	**BASE SECTION**							PROVISION
a)	SIZE(DIAMETER) IN mm							1800
b)	DIA WISE DIMENSIONS							
	INNER DIA OF BASE(D2) (mm)	WALL THK.(T1) (mm)	WALL THK.(T2) (mm)	JOINT DEPTH (mm)	BASE THK.(T3) (mm)	OUTER DIA OF BASE(D1) (mm)	HEIGHT	
	1800	250	250	50	300	2600	UPTO 6m	
c)	AVAILABLE HEIGHT FOR BASE IN MM(H1)							300 TO 700 OR AS REQUIRED
d)	HOLES FOR SEWER CONNECTIONS							100mmØ MORE THAN OUTER Ø OF SEWER
e)	A)MAT CONCRETE THICKNESS IN MM & MIX							100mmTHICK,1:2:4 MIX
	B)CONCRETE MIX FOR WALL AND BASE							RCC M30 GRADE
f)	CONCRETE FILL FOR BENCHING							1:2:4, MIX WITH 1:6 SLOPE
g)	REINFORCEMENT							
	a)FOR BASE SLAB							AS PER RC DETAIL
	b)FOR WALL							AS PER RC DETAIL
2	**RISER SECTION**							
a)	AVAILABLE HEIGHT FOR RISER SECTION (H2)							300 TO 900 OR AS REQUIRED
b)	WALL THICKNESS IN MM							250mm
c)	JOINT THICKNESS AND JOINT MATERIAL							SAME AS BASE SECTION
d)	REINFORCEMENT IN THE WALL							AS PER DETAIL DRG.
3	**ECCENTRIC CONE SECTION**							
a)	SHAPE							ECCENTRIC CONE
b)	CONCRETE FILL AROUND SEWER							1:1.5:3MIX
c)	THICKNESS(T2)							250mm
d)	REINFORCEMENT							AS PER DETAIL DRG.
e)	TOP OPENING							560mm
f)	JOINT DEPTH							AS PER DETAIL DRG.
4	**STANDARD MANHOLE FRAME AND COVER**							AS PER IS 12592-2002
a)	SHAPE							FLAT
b)	COVER SIZE							560mm
c)	SPECIFICATION							HD-20

NOTE:

1. ALL DIMENTIONS ARE IN mm AND ALL LEVELS ARE IN METER.
2. THE LIFTING HOLES SHALL BE FILLED WITH CONCRETE 1:1.5:3 MIX.
3. 3mm PVC ENCAPSULATE ON 12mm BAR, FOOT STEPS Fe 500.
4. THE NON CORE OPENING SHALL BE 100mm GREATER THAN THE OUTER DIA OF SEWER
5. SINGLE OFFSET JOINT CONFIGURATION SHALL BE ADOPTED AT THE JOINT.
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    a)WALL SOIL SEWAGE FACE=50mm
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12. NET SAFE BEARING CAPACITY IS ASSUMED TO BE 10 TON/Sq.m. IF LOWER SBC ENCOUNTERED, THE BASE SLAB THICKNESS SHALL BE INCREASED AS PER DIRECTION OF ENGINEER.
13. PRE CAST FRAME AND COVER AS PER IS:12592-2002.
14. LOWEST FOOT REST SHALL NOT BE MORE THAN 300mm ABOVE BENCHING.
15. FOR MINIMUM DEPTH-MANHOLES(1.25m), WHEREVER OCCURS,THE CONICAL SECTION AND THE RISER SEGMENT (H1) MAY BE CAST AS A SINGLE UNIT BASED ON THE SITE CONDITIONS.
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PO	SIGN.												19-12-2023
	INITIALS	SGS	XX	XX						XX	XX		
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME		PE/PM	APPD	DATE	
		CLEARED											

BANGALORE WATER SUPPLY AND SEWERAGE BOARD
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TITLE: RCC PRECAST SEWER MANHOLE DETAILS 1800mm DIA (TYPICAL) FOR DEPTH UPTO 6.0M

TENDER PURPOSE ONLY

SCALE : AS SHOWN	DWG NO.	ISSUE
DC & DISC : BLR & CV		P0

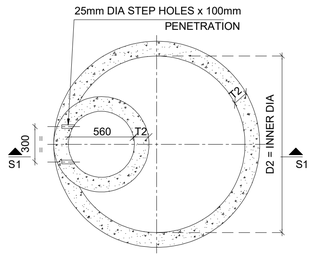
SIZE-A1

FILE NAME: F-091-Rev-R1.dwg

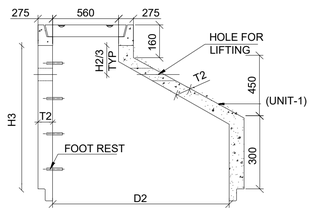
TCE FORM NO. 091 R1

TITLE: RCC PRECAST SEWER MANHOLE DETAILS 2400mm DIA (TYPICAL) FOR DEPTH UPTO 8.0M

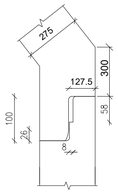
DWG NO



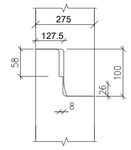
1 PLAN AT MANHOLE TOP LVL
SCALE : NTS



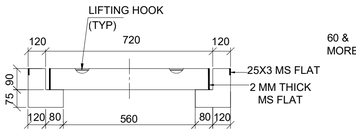
3 DETAIL OF SEGMENT - H3(UNIT-1)
SCALE : NTS



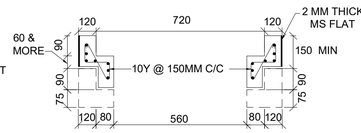
DETAIL OF 'Y'
TYP.JOINING DETAILS OF 2400 DIA PRECAST SEGMENT



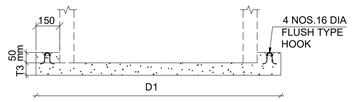
DETAILS OF 'Z'
TYP.JOINING DETAILS OF 2400 DIA PRECAST SEGMENT



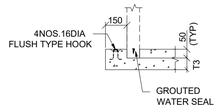
DETAIL OF 'X'
HD-20 MANHOLE COVER



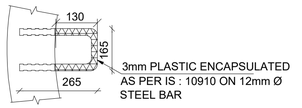
ADDITIONAL MANHOLE HEIGHT TO MATCH FINISHED ROAD LEVEL



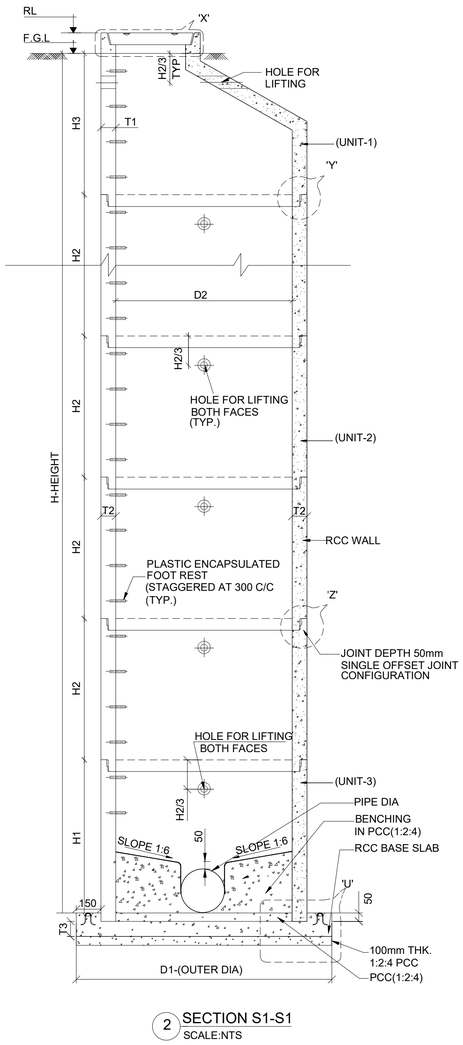
DETAILS OF BASE SLAB



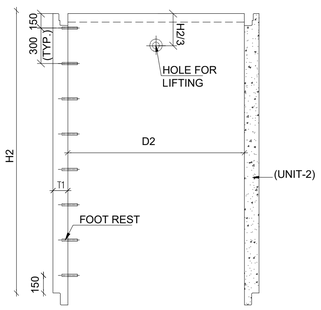
DETAIL OF 'U'



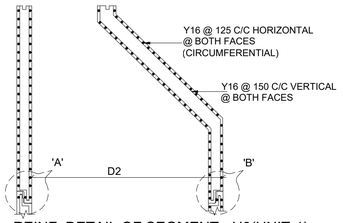
TYPICAL PLASTIC ENCAPSULATED FOOT REST DETAILS



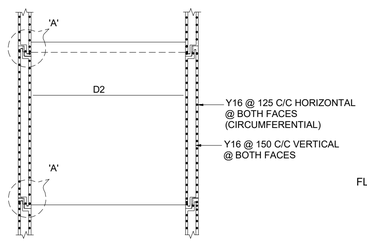
2 SECTION S1-S1
SCALE:NTS



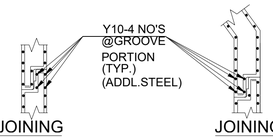
4 DETAIL OF SEGMENT - H2(UNIT-2)
SCALE : NTS



5 REINF. DETAIL OF SEGMENT - H3(UNIT-1)
SCALE : NTS

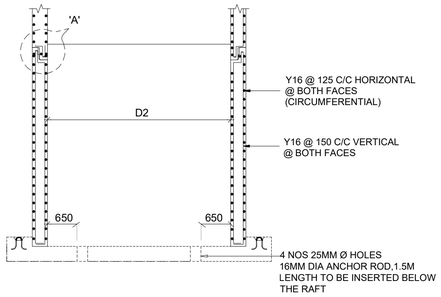


6 REINF. DETAIL OF SEGMENT - H2(UNIT-2)
SCALE : NTS

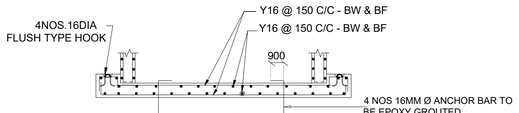


JOINING DETAIL - 'A'

JOINING DETAIL - 'B'


'A'
D2
Y16 @ 125 C/C HORIZONTAL @ BOTH FACES (CIRCUMFERENTIAL)
Y16 @ 150 C/C VERTICAL @ BOTH FACES
650
650
4 NOS 25MM Ø HOLES 16MM DIA ANCHOR ROD,1.5M LENGTH TO BE INSERTED BELOW THE RAFT

7 REINF. DETAIL OF SEGMENT - H1(UNIT-3)
SCALE : NTS



8 REINF. DETAIL OF BASE SLAB
SCALE : NTS

STANDARD DATA FOR PRECAST MANHOLE								
1	**BASE SECTION**							PROVISION
a)	SIZE(DIAMETER) IN mm							2400
b)	DIA WISE DIMENSIONS							
	INNER DIA OF BASE(D2) (mm)	WALL THK.(T1) (mm)	WALL THK.(T2) (mm)	JOINT DEPTH (mm)	BASE THK.(T3) (mm)	OUTER DIA.OF BASE(D1) (mm)	HEIGHT	
	2400	275	275	50	350	3250	UPTO 8m	
c)	AVAILABLE HEIGHT FOR BASE IN MM(H1)							300 TO 700 OR AS REQUIRED
d)	HOLES FOR SEWER CONNECTIONS							100mmØ MORE THAN OUTER Ø OF SEWER
e)	A)MAT CONCRETE THICKNESS IN MM & MIX							100mmTHICK,1:2:4 MIX
	B)CONCRETE MIX FOR WALL AND BASE							RCC M30 GRADE
f)	CONCRETE FILL FOR BENCHING							1:2:4, MIX WITH 1:6 SLOPE
g)	REINFORCEMENT							
	a)FOR BASE SLAB							AS PER RC DETAIL
	b)FOR WALL							AS PER RC DETAIL
2	**RISER SECTION**							
a)	AVAILABLE HEIGHT FOR RISER SECTION (H2)							300 TO 900 OR AS REQUIRED
b)	WALL THICKNESS IN MM							275mm
c)	JOINT THICKNESS AND JOINT MATERIAL							SAME AS BASE SECTION
d)	REINFORCEMENT IN THE WALL							AS PER DETAIL DRG.
3	**ECCENTRIC CONE SECTION**							
a)	SHAPE							ECCENTRIC CONE
b)	CONCRETE FILL AROUND SEWER							1:1.5:3MIX
c)	THICKNESS(T2)							275mm
d)	REINFORCEMENT							AS PER DETAIL DRG.
e)	TOP OPENING							560mm
f)	JOINT DEPTH							AS PER DETAIL DRG.
4	**STANDARD MANHOLE FRAME AND COVER**							AS PER IS 12592-2002
a)	SHAPE							FLAT
b)	COVER SIZE							560mm
c)	SPECIFICATION							HD-20

NOTE:

1. ALL DIMENTIONS ARE IN mm AND ALL LEVELS ARE IN METER.
2. THE LIFTING HOLES SHALL BE FILLED WITH CONCRETE 1:1.5:3 MIX.
3. 3mm PVC ENCAPSULATE ON 12mm BAR, FOOT STEPS Fe 500.
4. THE NON CORE OPENING SHALL BE 100mm GREATER THAN THE OUTER DIA OF SEWER
5. SINGLE OFFSET JOINT CONFIGURATION SHALL BE ADOPTED AT THE JOINT.
6. THE JOINT SHALL BE SEALED WITH NON SHRINK GROUT/SINGLE RUBBER SEAL SHALL BE PROVIDED IN PRECAST UNITS.RUBBER GASKET SHALL BE AS PER IS 5382.
7. 150mm LIP IS OPTIONAL UNLESS OTHERWISE NOTED.
8. GRADE OF CONCRETE SHALL BE RCC M30 MIX FOR MANHOLE WALL AND FOR BASE SLAB WITH SULPHATE RESISTANCE CEMENT.
9. ALL REINFORCEMENT BARS SHALL BE HYSD CRS BARS OF GRADE Fe 500 CONFORMING TO IS:1786.
10. CLEAR COVER TO MAIN REINFORCEMENT SHALL BE:
    a)WALL SOIL SEWAGE FACE=50mm
    b)BASE SLAB =50mm
11. THIS DRAWING IS ONLY TYPICAL CONSTRUCTION DRAWING. THE CONTRACTOR HAS TO TAKE PRIOR APPROVAL TO THE PROCESS OF MANUFACTURE OF THE PRECAST MANHOLE.
12. NET SAFE BEARING CAPACITY IS ASSUMED TO BE 10 TON/Sq.m. IF LOWER SBC ENCOUNTERED, THE BASE SLAB THICKNESS SHALL BE INCREASED AS PER DIRECTION OF ENGINEER.
13. PRE CAST FRAME AND COVER AS PER IS:12592-2002.
14. LOWEST FOOT REST SHALL NOT BE MORE THAN 300mm ABOVE BENCHING.
15. FOR MINIMUM DEPTH-MANHOLES(1.25m), WHEREVER OCCURS,THE CONICAL SECTION AND THE RISER SEGMENT (H1) MAY BE CAST AS A SINGLE UNIT BASED ON THE SITE CONDITIONS.
16. PROVISION FOR INCOMING SEWERS, HOUSE SERVICE CONNECTIONS IF ANY SHALL BE PROVIDED
17. PROVISION FOR DROP (FOR DROP ARRANGEMENT) IN MH's SHALL BE PROVIDED AS PER SITE REQUIREMENT AND AS DIRECTED
18. INCASE OF HIGHER DIAMETER PIPES, PROVISION FOR THE INCOMING AND OUTGOING SEWERS MAY BE PROVIDED IN TWO PRECAST MEMEBERS OR HEIGHT OF THE BOTTOM PRECAST MEMBERS MAY BE INCREASED
19. ADDITION REINFORCEMENT AS PER APPROVED DRAWINGS IN AND ALLROUND PIPE OPENINGS SHALL BE PROVIDED
20. INTERCONNECTION WITH INCOMING & OUTGOING SEWERS INCLUDING FIXING THEM WITH RCC M30 GRADE CONCRETE
21. THE WORK SHALL BE DONE AS PER BOQ, SPECIFICATIONS AND CONTRACT PROVISIONS.

LEGEND:

FGL -FINISHED GROUND LEVEL
RL -ROAD LEVEL
LVL -LEVEL
THK. -THICKNESS
TYP. -TYPICAL
BW - BOTH WAYS
BF -BOTH FACES

DO NOT SCALE

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FILE NAME :13370A-CV-3009-Rev-P0

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P0	SIGN.											19-12-2023
	INITIALS	SGS	XX	XX						XX	XX	
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME		PE/PM	APPD	DATE
					CLEARED							

BANGALORE WATER SUPPLY AND SEWERAGE BOARD
CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT FOR THE WORK OF PROVIDING AND LAYING 900/1200/1400mm DIA RCC NP-3 CLASS SEWER LINE INCLUDING TRENCHLESS TECHNOLOGY METHOD FROM M V GARDEN TO AMARJYOTHI LAYOUT ISPS DOMLURU

TITLE: RCC PRECAST SEWER MANHOLE DETAILS 2400mm DIA (TYPICAL) FOR DEPTH UPTO 8.0M

TENDER PURPOSE ONLY

SCALE : AS SHOWN	DWG NO.	ISSUE
DC & DISC:BLR & CV		P0

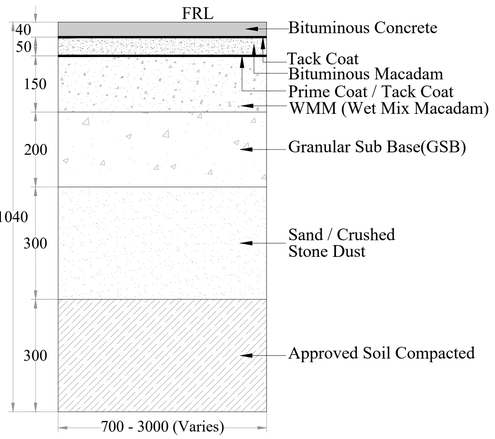
SIZE-A1

FILE NAME: F-091-Rev-R1.dwg

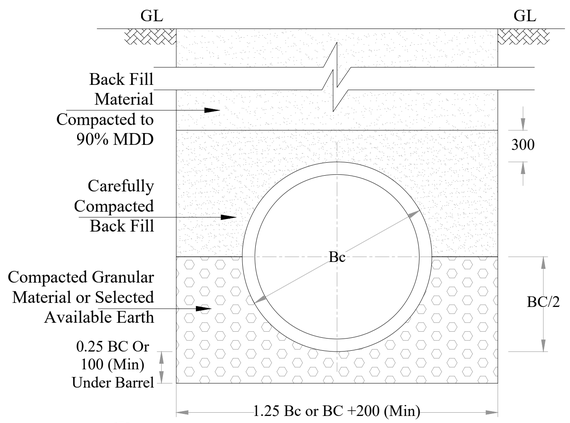
TCE FORM NO. 091 R1

DWG NO

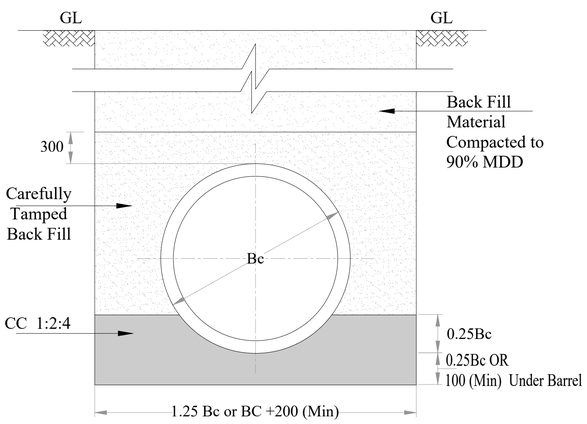
TITLE: TYPICAL DRAWING OF PIPE BEDDING/ENCASING AND CROSS SECTION OF ROAD RESTORATION



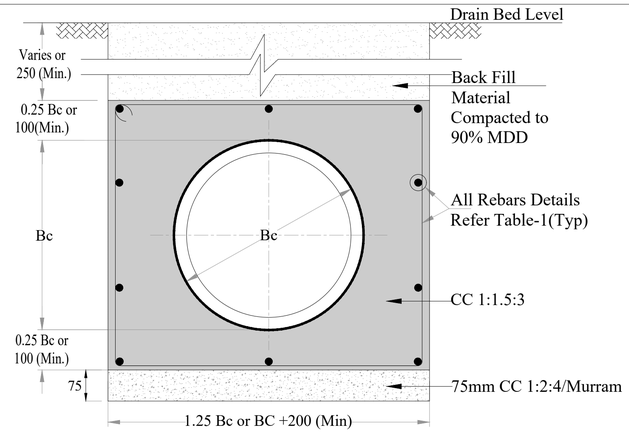
TYPICAL CROSS SECTION OF ROAD RESTORATION



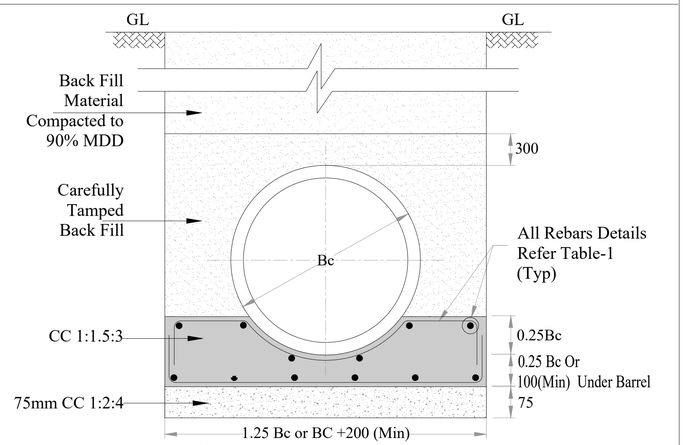
1 COMPACTED GRANULAR BEDDING(GRB) CLASS-B



2 PLAIN CONCRETE CRADLE BEDDING CLASS-Ab



3 BEDDING / ENCASING CLASS-Ae



4 RCC CRADLE BEDDING CLASS-Ac

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. CONCRETE GRADE SHALL BE AS PER BOQ PROVISIONS.
3. STEEL FOR REINFORCEMENT SHALL BE HIGH YIELD STRENGTH DEFORMED BARS OF GRADE FE500 CONFORMING TO IS-1786.
4. REINFORCEMENT WHERE SPLICED SHALL HAVE A MINIMUM LAP OF 50 X BAR DIAMETER. LAPS SHALL BE STAGGERED.
5. CLEAR COVER TO REINFORCEMENT BEDDING SHALL BE 50MM.
6. THE FIGURE SHOWS TYPICAL ARRANGEMENT OF REINFORCEMENT FOR EXACT DETAILS REFER TABLE 1.
7. THE WORK SHALL BE DONE AS PER BOQ, SPECIFICATIONS AND CONTRACT PROVISIONS.
8. IN MAJOR ROADS AND ROAD CROSSINGS,TRENCH FILLING WITH QUARRY DUST CAN BE ADOPTED AND SHALL BE AS PER SITE REQUIREMENT OR AS DIRECTED BY ENGINEER.
9. THE THICKNESS OF QUARRY DUST SHALL NOT EXCEED 1m BELOW THE ROAD SURFACE.

ABBREVIATIONS

1. GL - GROUND LEVEL
2. Thk - THICK
3. Min - MINIMUM
4. Typ - TYPICAL
5. Bc - BARREL OUTER DIAMETER
6. C/C - CENTER TO CENTER
7. RCC - REINFORCED CEMENT CONCRETE
8. PCC - PLAIN CEMENT CONCRETE
9. MDD - MAXIMUM DRY DENSITY
10. WMM - WET MIX MACADAM
11. SWD - STORM WATER DRAIN
12. FRL - FINISHED ROAD LEVEL
13. GSB - GRANULAR SUB BASE
14. GRB -GRANULAR BEDDING

TABLE -1: REINFORCEMENT DETAILS FOR BEDDING/ENCASING

Barrel Internal Dia	Barrel Outer Dia (Bc)	CLASS - Ac			CLASS - Ae			
		Dia of rods	Top bars (Both Ways)	Bottom bars (BothWays)	Dia of rods	Top bars (Both Ways)	Bottom bars (BothWays)	Side Bars
			Spacing	Spacing		Spacing	Spacing	Spacing
1000	1230	12	150	150	12	100	100	100
1100	1330	12	150	150	12	100	100	100
1200	1440	12	150	150	12	100	100	100
1400	1670	12	150	150	12	100	100	100
1600	1880	12	150	150	12	100	100	100

SL.NO.	TYPE OF BEDDING/ENCASING	APPLICATION CONDITIONS
1.	CLASS B	In firm, hard or dense soil/rocky strata for depths up to 6m cover.
2.	CLASS Ab	To be provided in loose soil, with depth of cover between 1m and 6m.(not to be adopted on hard or dense soil)
3.	CLASS Ae	1.For drain and road crossings 2.For sewer pipes laid in drains/nallah where cover over pipe is less than 1m
4.	CLASS Ac	1.For sewer pipes laid where cover over pipe is more than 6m/As per site conditions. 2.For sewer pipes laid along or across lake beds.

DO NOT SCALE

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BANGALORE WATER SUPPLY AND SEWERAGE BOARD
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TITLE: TYPICAL DRAWING OF PIPE BEDDING/ENCASING AND CROSS SECTION OF ROAD RESTORATION

TENDER PURPOSE ONLY

SCALE : AS SHOWN	DWG NO.	ISSUE
DC & DISC: BLR & CV		P0

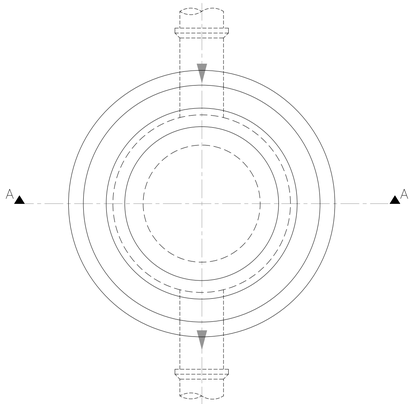
SIZE-A1

FILE NAME: F-091-Rev-R1.dwg

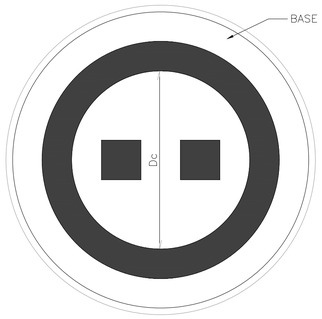
TCE FORM NO. 091 R1

DWG NO

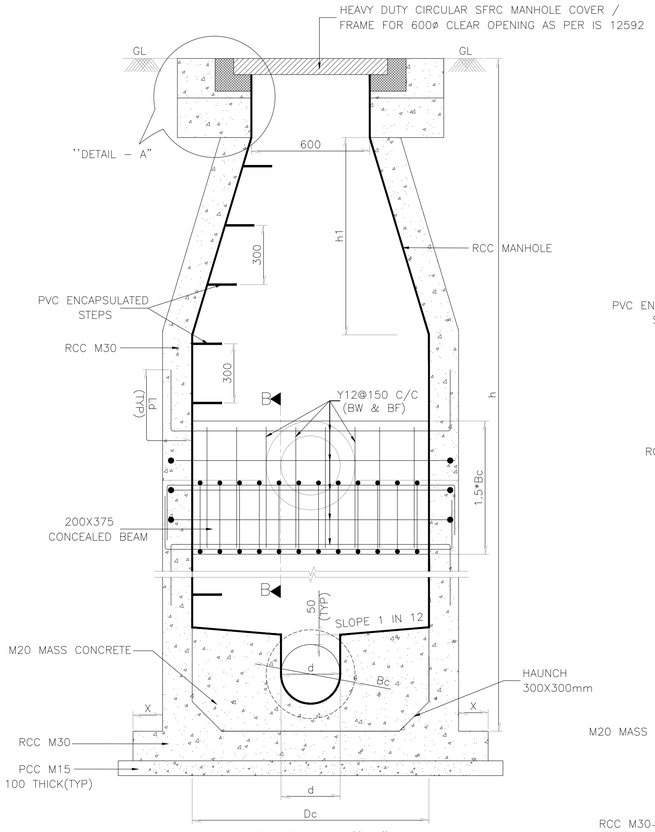
TITLE: TYPICAL DROP MANHOLE WITH BAFFLE WALL TYPE DRAWING FOR PIPE DIAMTER ABOVE 600MM



TYP. PLAN OF MANHOLE AT GL

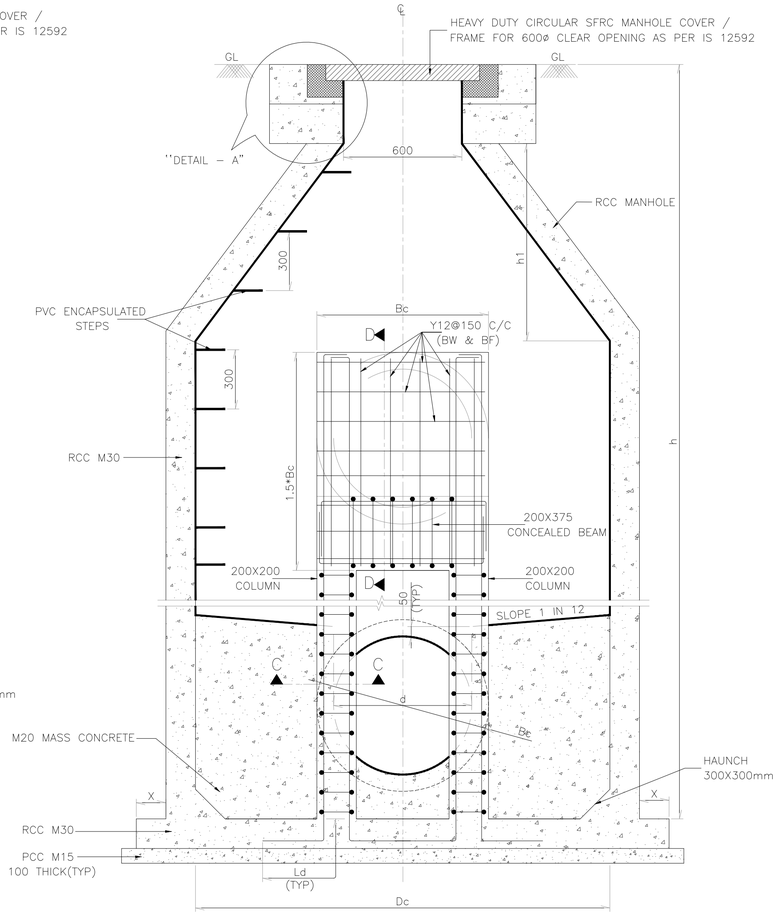


PLAN OF MANHOLE WITH COLUMNS AT RAFT LEVEL



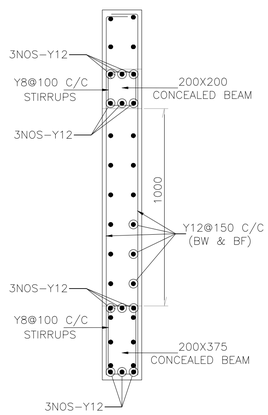
SECTION ON''AA''

(REFER THIS SECTION FOR MANHOLE CHAMBER DIA 1.2M,1.5M AND 1.8M)



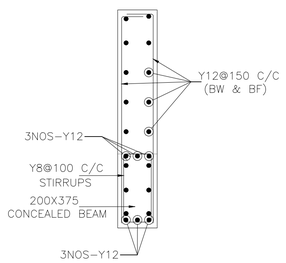
SECTION ON''AA''

(REFER THIS SECTION FOR MANHOLE



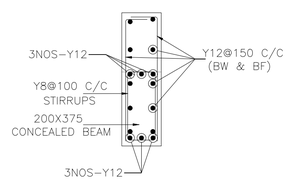
TYPICAL SECTION

(REFER THIS SECTION WHEREVER PIPE DIA 1.10M,1.2M AND 1.4M)



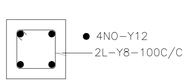
SECTION ON''DD''

(TO FINALIZE THE DEPTH OF BAFFLE REFER TABLE:2)



SECTION ON''BB''

(REFER THIS SECTION WHEREVER MANHOLE CHAMBER DIA 1.10M,1.2M AND 1.4M)



SECTION ON''CC''

(COLUMN 200X200)

ABBREVIATIONS:

1. GL – GROUND LEVEL
2. MM – MILLIMETER
3. M – METER
4. DIA – DIAMETER
5. TYP – TYPICAL
6. C.M. – CEMENT MORTER
7. SBC – SOIL BEARING CAPACITY
8. PVC – POLY VINYL CHLORIDE
9. PCC – PLAIN CEMENT CONCRETE
10. RCC – REINFORCED CEMENT CONCRETE
11. SFRC– STEEL FIBRE REINFORCED CONCRETE
12. BF – BOTH FACE
13. BW – BOTH WAYS
14. 2L – TWO LEGGED

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS & ALL LEVELS IN METERS.
2. THE DEPTH OF MANHOLE DENOTES THE DEPTH FROM GROUND LEVEL TO INVERT OF SEWER.
3. THE SEWER CHANNELS IN THE MANHOLES WILL BE FORMED IN CEMENT CONCRETE M30 AND FINISHED WITH 20THICK CEMENT PLASTER(1:2).
4. NET SAFE BEARING CAPACITY OF SOIL – 15T/SQM
5. C.M.(1:1) SHALL BE PROVIDED ALL AROUND THE PIPE ENTERING AND LEAVING THE MANHOLE.
6. CONCRETE FOUNDATIONS FOR MANHOLES SHOULD BE DESIGNED TO SUIT NATURE OF SUB SOIL AND MAXIMUM SUB SOIL WATER.
7. THE STEPS TO THE MANHOLE SHOULD BE FIXED STAGGERED AT A SPACING OF 150MM & 300MM BOTH VERTICAL AND HORIZONTAL CENTRE TO CENTRE AND THE FIRST STEP 450MM BELOW GROUND LEVEL.
8. ADDITIONAL STEPS (3NOS) SHALL BE PROVIDED ON THE OTHER SIDE OF BENCHING INCASE THE DEPTH OF MANHOLE EXCEEDS 3 METERS.
9. MANHOLE LOCATED ON ROAD SHALL HAVE MANHOLE COVER FLUSH WITH FINISHED ROAD SURFACE OR PROTRUDING ABOVE ROAD SURFACE AS DIRECTED BY THE ENGINEER.
10. CHANNELS FOR MANHOLE ARE TO BE CONSTRUCTED DULY CONSIDERING THE DIRECTION OF FLOW AS WELL AS ALIGNMENT AND INVERT LEVEL OF PIPES ENTERING/LEAVING THE MANHOLE AND AS DIRECTED BY ENGINEER.
11. THE EXACT TYPE OF MANHOLE SHALL BE DECIDED AS PER DIAMETER OF PIPE, DEPTH OF INVERTS AND AS PER SITE CONDITION AND AS DIRECTED BY THE ENGINEER.
12. THE BENCHING SHALL COMMENCE FROM 50MM ABOVE THE PIPE TOP LEVEL AND SLOPING IN 1:12 TOWARDS THE WALL OF THE MANHOLE.
13. 'Y' INDICATES HIGH YIELD STRENGTH DEFORMED BARS OF GRADE TOR/TMT Fe500D.
14. CLEAR COVER TO MAIN REINFORCEMENT SHALL BE
    a) WALL – EARTH FACE: 45MM
    b) WALL – INSIDE FACE: 45MM
    c) BASE SLAB – BOTTOM: 50MM
    d) BASE SLAB – TOP: 45MM
15. ALL LAPS SHALL BE 41 TIMES DIA OF BAR AND SHALL BE STAGGERED
16. VATA IN C.M (1:1) SHALL BE PROVIDE ALL AROUND THE PIPE ENTERING THE DIRECTION OF FLOW AS WELL AS ALIGNMENT AND INVERT LEVEL OF PIPES ENTERING/LEAVING AND MANHOLE AND AS DIRECTED BY ENGINEER–IN–CHARGE
17. MANHOLE AND FRAME OF HEAVY DUTY AS PER I.S.12592–2002.
18. THE BENCHING AT THE SIDE OF THE CHANNEL SHALL BE AT LEAST 50MM ABOVE THE CROWN OF THE PIPE AND THEN RISE WILL A SLOPE OF 1 IN 12 TOWARDS (AS PER IS:4111 (PART–1) CI.5.2) THE SIDE OF THE MANHOLES. SEMICIRCULAR PORTION WILL BE ACHIEVED IN CEMENT CONCRETE FINISHING ITSELF.

CONS.REF. DRAWINGS:

1. TYPICAL RCC MANHOLE ARRANGEMENT – TCE–1900 I&D–DEP–CV–DWG–282

TABLE–1:

PIPE DIA DETAILS	
Internal Dia	Outer Dia (Bc)
mm	m
300	0.45
400	0.55
450	0.60
500	0.65
600	0.77
700	0.87
800	0.99
900	1.10
1000	1.23
1100	1.33
1200	1.44
1400	1.67

TABLE–2:

TYPE OF MANHOLE	DIA OF PIPE IN 'mm'	DEPTH OF MANHOLE IN 'M'	DIA OF CHAMBER IN 'M'
	d	h	Dc
TYPE–A	UPTO 600	UPTO 5.0	1.2
TYPE–B	UPTO 600	5.0 TO 8.0	1.5
TYPE–C	UPTO 600	>8.0	1.8
TYPE–D	700 TO 1000	UPTO 4.0	1.5
TYPE–E	700 TO 1000	4.0 TO 6.0	1.8
TYPE–F	700 TO 1000	>6.0	2.1
TYPE–G	1100 TO 1400	2.0 TO 5.0	2.1

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FILE NAME :13370A–CV–3009–Rev–P0

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P0	SIGN.												11–12–2023
	INITIALS	SGS	XX	XX							XX	XX	
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME			PE/PM	APPD	DATE
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BANGALORE WATER SUPPLY AND SEWERAGE BOARD

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT FOR THE WORK OF PROVIDING AND LAYING 900/1200/1400mm DIA RCC NP–3 CLASS SEWER LINE INCLUDING TRENCHLESS TECHNOLOGY METHOD FROM M V GARDEN TO AMARJYOTHI LAYOUT ISPS DOMLURU

TITLE:

TYPICAL DROP MANHOLE WITH BAFFLE WALL TYPE DRAWING FOR PIPE DIAMTER ABOVE 600MM

TENDER PURPOSE ONLY

SCALE : AS SHOWN	DWG NO.	ISSUE
DC & DISC: BLR & CV		P0

SIZE–A1

FILE NAME: F–091–Rev–R1.dwg

TCE FORM NO. 091 R1

DWG NO: ------

TITLE: PLOT PLAN FOR ISPS AT AMARJYOTHI LAYOUT

G+4

DETAILS OF UNITS :

NOS.	NAME OF UNITS	UNITS	DIMENSIONS (M) L	B	H
1	OVERFLOW CHAMBER	1	2.50	3.00	–
2	INLET CHAMBER	1	5.40	2.50	8.95
3	COARSE SCREEN CHANNEL	3	5.40	8.00	8.98
4	COMMON CHANNEL	1			
5	WETWELL(CIRCULAR)	1	14.0 DIA		14.06
6	LT PANEL ROOM	1	21.33	6.11	4.50
7	DG SET SHED	1	6.50	3.00	–
8	TRANSFORMER YARD	1	12.00	6.00	–
9	BESCOM METERING AREA	1	4.50	2.40	–
10	VCB PANEL AREA	1	4.50	5.60	–
11	MOTORISED KNIFE GATE VALVE CHAMBER	1	3.00	4.00	4.00
12	ELECTRO MAGNETIC FLOW METER CHAMBER	1	3.60	3.60	4.00
13	NON RETURN VALVE CHAMBER	1	4.00	4.50	4.00
14	ADMIN BUILDING (G+1)	1	6.00	10.00	4.50
15	GUARD ROOM	1	3.00	3.00	3.00

MH-120
Drain & Compound Wall
GL: 878.52 m
SV-89
IL: 874.29 m
878.582
878.322
IL: 874.85 m
GL: 878.60 m
MH-119
1100ø PUMP DISCHARGE PIPE
2.3M HORIZONTAL CLEARANCE FROM HT LINE
High Tension Powerline
2.3M HORIZONTAL CLEARANCE FROM HT LINE
Compound Wall
House
CHANNEL
04
IL. 872.14
SCREEN CONTAINER
01
02
03
S-1005A
S-1005B
S-1005C
IL. 872.22
IL. 872.52
IL. 872.59
IL. 872.22
IL. 872.52
IL. 872.22
IL. 872.52
2500
2000
3000
5400
8000
2500
PROPOSED PUMP HOUSE
05
14000
9890
4130
2000
Compound Wall
House
NRV
13
1000
FM
12
KNV
11
50
17270
4611
GL: 879.38 m
874.28 m
Covered Drain
1100ø PUMP DISCHARGE PIPE
DG SHED
415V DG SET
07
3000
6500
Compound Wall
EXISTING PUMP HOUSE
EXISTING 82.5kVA DG SET
Compound Wall
Reception
21334
6110
LT PANEL
06
I/C-1
B/C
MAIN PCC
I/C-2
2.0000
1.0000
APFC-2
APFC-2
STARTER-2 W/D
STARTER-1 W/D
STARTER-4 SOFT
STARTER-3 SOFT
STARTER-2 SOFT
STARTER-1 SOFT
W/V
W/V
W/V
W/V
W/V
ACP PANEL
DG PANEL
MAIN BUS BAR
SHUTTER (2250×4000)
House
House
Foot Path
House
TBM2
RL:879.550
1500
1500
Compound Wall
BWSSB
Kormangala &
Challaghatta Vally
AEE Office
14
ADMIN BUILDING
(G+1)
10000
6000
METER
2400
5600
TBM1
RL:879.550
11kV BESCOM METER
VCB PANEL
I/C-1
I/C-2
11kV VCB PANEL
09
10
4500
8000
BESCOM INCOMER 11kV CABLE
3.5 MTR
WIDE GATE 1.2 MTR
High Tension Powerline
14
TRANSFORMER YARD
12025
08
11/0.433kV, 1056KVA TRANSFORMER-2
HV
LV
11/0.433kV, 1056KVA TRANSFORMER-2
HV
LV
WIDE GATE
6000
Compound Wall
3.5M WIDE GATE
3.5M WIDE GATE
EXISTING TRANSFORMER YARD
Compound Wall

DO NOT SCALE

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	SIGN.										
	INITIALS										
	REVISIONS										
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	INITIALS										
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	SIGN.										
	INITIALS										
ISSUE					CLEARED						

BANGALORE WATER SUPPLY AND SEWERAGE BOARD

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT FOR THE WORK OF PROVIDING AND LAYING 900/1200/1400mm DIA RCC NP-3 CLASS SEWER LINE INCLUDING TRENCHLESS TECHNOLOGY METHOD FROM M V GARDEN TO AMARJYOTHI LAYOUT ISPS DOMLURU

PLOT PLAN FOR ISPS AT AMARJYOTHI LAYOUT

TENDER PURPOSE ONLY

SCALE : 1:125 | DWG NO. | ISSUE

DC & DISC:

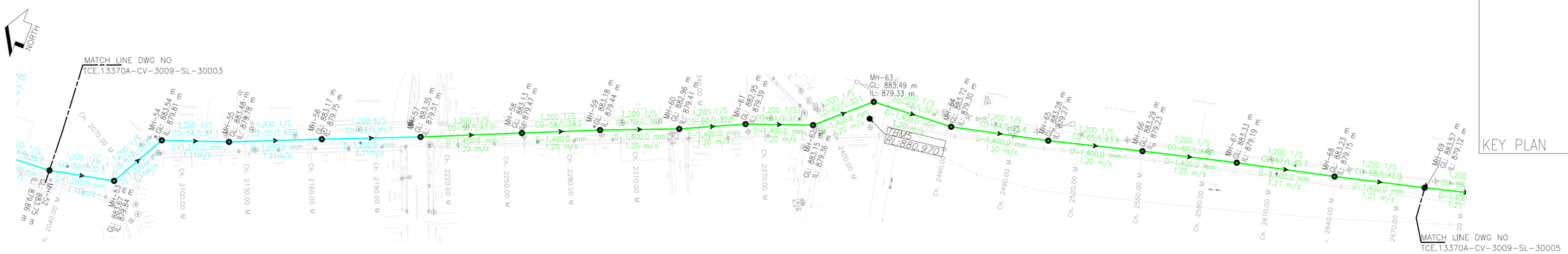
SIZE-A1

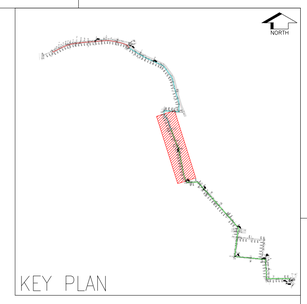
FILE NAME: F-091-Rev-R1.dwg

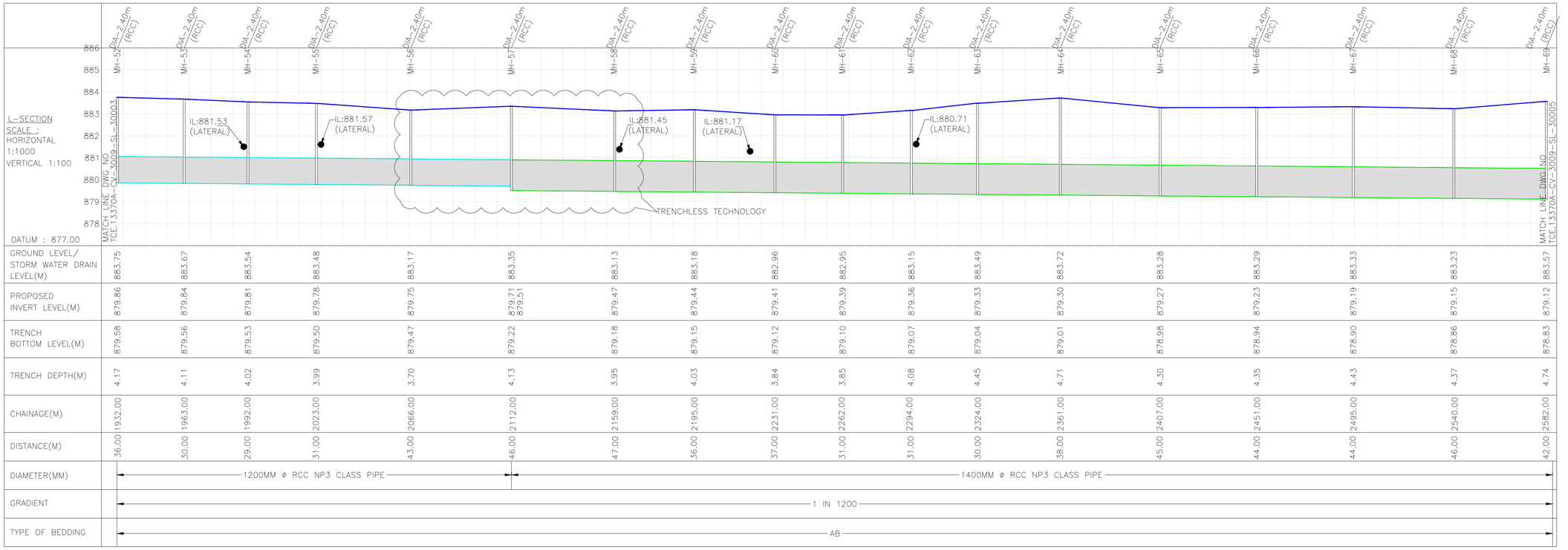
TCE FORM NO. 091 R1

TITLE: PLAN AND LONGITUDINAL SECTION OF 900/1200/1400MM DIA RCC NP3 PIPELINE FROM GURUDWARA TO ISPS AT AMARJYOTHI LAYOUT AT CHALLAGHATTA VALLEY - (SH 04 OF 07)

DWG NO







	MH-52	MH-53	MH-54	MH-55	MH-56	MH-57	MH-58	MH-59	MH-60	MH-61	MH-62	MH-63	MH-64	MH-65	MH-66	MH-67	MH-68	MH-69
	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)	DIA-2.40m (RCC)
GROUND LEVEL/ STORM WATER DRAIN LEVEL(M)	883.75	883.67	883.54	883.48	883.17	883.35	883.13	883.18	882.96	882.95	883.15	883.49	883.72	883.28	883.29	883.33	883.23	883.57
PROPOSED INVERT LEVEL(M)	879.86	879.84	879.81	879.78	879.75	879.71 879.51	879.47	879.44	879.41	879.39	879.36	879.33	879.30	879.27	879.23	879.19	879.15	879.12
TRENCH BOTTOM LEVEL(M)	879.58	879.56	879.53	879.50	879.47	879.22	879.18	879.15	879.12	879.10	879.07	879.04	879.01	878.98	878.94	878.90	878.86	878.83
TRENCH DEPTH(M)	4.17	4.11	4.02	3.99	3.70	4.13	3.95	4.03	3.84	3.85	4.08	4.45	4.71	4.30	4.35	4.43	4.37	4.74
CHAINAGE(M)	1932.00	1963.00	1992.00	2023.00	2066.00	2112.00	2159.00	2195.00	2231.00	2262.00	2294.00	2324.00	2361.00	2407.00	2451.00	2495.00	2540.00	2582.00
DISTANCE(M)	36.00	30.00	29.00	31.00	43.00	46.00	47.00	36.00	37.00	31.00	31.00	30.00	38.00	45.00	44.00	44.00	46.00	42.00
DIAMETER(MM)	1200MM ø RCC NP3 CLASS PIPE						1400MM ø RCC NP3 CLASS PIPE											
GRADIENT	1 IN 1200																	
TYPE OF BEDDING	AB																	

NOTES:
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE MENTIONED.
2. ALL LEVELS ARE WITH REFERENCE TO THE GTS BENCH MARK ENGRAVED ON CENTRE OF 2ND STONES ON EAST SIDE OF QUEEN VICTORIA'S STATUE IN CUBBON PARK, BANGALORE. ITS VALUE IS 912.266M.
3. TOP OF MANHOLE SHALL BE FLUSH WITH FINISHED ROAD LEVEL UNLESS NOTED.
4. BEDDING TO BE PROVIDED SHALL BE AS PER DRAWING OR AS DIRECTED BY THE ENGINEER.
5. DURING EXCAVATION IF SOIL IS FOUND TO BE UNUSUAL THE CONTRACTOR SHALL REPORT TO ENGINEER FOR DESIGNING APPROPRIATE BEDDING TO BE PROVIDED FOR PIPE.
6. ACTUAL ALIGNMENT OF SEWERS AND EXACT LOCATIONS OF MANHOLES SHALL BE AS PER SITE CONDITIONS & AS DIRECTED BY ENGINEER.
7. THE CONNECTION FROM/TO THE EXISTING MANHOLE SHALL BE DONE WITH PRIOR PERMISSION & AS DIRECTED BY THE ENGINEER,
8. IF THE TRUNK SEWER ROUTE IS PARALLEL TO DRAIN, THEN THE TOP OF MANHOLES SHOULD BE ATLEAST 0.3m ABOVE THE HFL OF THE DRAIN OR AS DIRECTED BY THE ENGINEER.
9. WORK TO PROCEED FROM LOWER IL TOWARDS HIGHER IL UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
10. ALIGNMENT FOR PIPE JACKING TO BE FINALISED BASED ON AVAILABILITY OF SPACE, IN CONSULTATION WITH THE DESIGN OFFICE.
12. VENTILATING SHAFT ARE PROVIDED AT INTERVALS FOR PRESSURE MANHOLES IN SWD.
13. DURING CONDITION ASSESSMENT, THE EXISTING MANHOLE/PIPES WERE FOUND TO BE IN GOOD CONDITION. THESE CAN BE RETAINED. HOWEWER IN FUTURE IT REQUIRED THEY CAN BE REPLACED WITH RCC NP3 PIPES OF SAME DIAMETER.
14. WHENEVER THE PIPE IS CROSSING STORM WATER DRAIN, AE BEDDING SHALL BE PROVIDED.

LEGENDS:
Alternate; Perimeter Boundary; Wire Fence
Main Power line with Pylons; Power line; Telegraph/Telephone line
Roads: Metalled; Unmetalled; Cart track; Foot path
Railway: Narrow gauge; Broad gauge
Buildings: Permanent; Temporary; Under Construction
Streams: Double line: Defined; Undefined; Singleline: Defined; Undefined
Huts: Permanent; Temporary; Well; Bore Well; Pump house; Temple; Graves
Embankment; Cutting; Quarry; Hedge
Drains: Large; Small; Forest boundary; Cultivation limit
Boulders; Rocky ground; Relative height
Sheet rock; Field bund
Trees. Ordinary; Coconut; Cactus; Casuarina; Palmyra
Bench Mark; Spot level
Gps Point, Traverse Point, Bench Mark

ABBREVIATIONS:
EMH – EXISTING MANHOLE
ECO – EXISTING CONDUIT
CO – CONDUIT
GL – GROUND LEVEL
RCC – REINFORCED CEMENT CONCRETE
IL – INVERT LEVEL
MH – MAHOLE
L – LENGTH

LEGENDS:
PROPOSED MANHOLE (MH)
EXISTING MANHOLE (EMH)
PROPOSED ALIGNMENT 1000
PROPOSED ALIGNMENT 1400
PROPOSED ALIGNMENT 1600
EXISTING ALIGNMENT
GROUND LEVEL AS PER SURVEY
STORM WATER DRAIN(SWD) BED LEVEL
VENTILATING SHAFT

* NOTE:
1. THE EXISTING SEWERS ARE SUFFICIENT TO CARRY SEWAGE TILL 2035. HOWEVER THE DESIGN CAN BE ADOPTED FOR PEAK SEWAGE 2050.

ENGINEERING REFERENCE DRAWINGS :
1. TYPICAL PIPE BEDDING & CROSS SECTION OF ROAD RESTORATION DRAWING TCE.10200A-CV-3009-RC-30401
2. TYPICAL STANDARD DETAILS OF PRECAST RCC MANHOLE – TCE.10200A-CV-3009-RC-30402
3. TYPICAL BRICK MANHOLE DRAWINGS (TYPE A & TYPE B) – TCE.10200A-CV-3009-RC-30403
4. TYPICAL BRICK MANHOLE DRAWINGS (TYPE C & TCE.10200A-CV-3009-RC-30404
5. TYPICAL DETAILS OF RCC PRESSURE MANHOLE AND VENTILATING SHAFT IN SWD – TCE.10200A-CV-3009-RC-30405
6. DETAILS OF TRENCH FOR DROP CHANNEL BETWEEN MANHOLES – TCE.10200A-CV-3009-RC-30406

CONSTRUCTION REFERENCE DRAWINGS :
–NIL–

CHALLAGHATTA VALLEY

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ISSUE		DRN	DSN	CHD	CV	EL	IC	ME		PE/PM	APPD	DATE
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BANGALORE WATER SUPPLY AND SEWERAGE BOARD

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PLAN AND LONGITUDINAL SECTION OF 900/1200/1400MM DIA RCC NP3 PIPELINE FROM GURUDWARA TO ISPS AT AMARJYOTHI LAYOUT AT CHALLAGHATTA VALLEY – (SH 04 OF 07)

TENDER PURPOSE ONLY

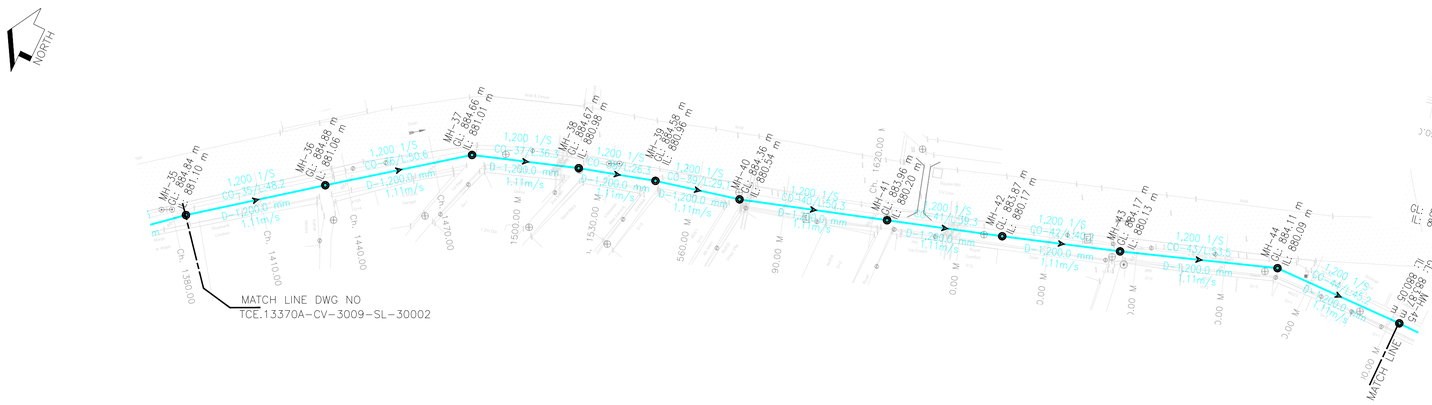
SCALE : AS SHOWN
DC & DISC: BLR & CV
DWG NO.
ISSUE P0
SIZE-A1

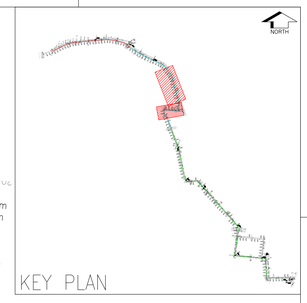
FILE NAME: F-091-Rev-R0.dwg

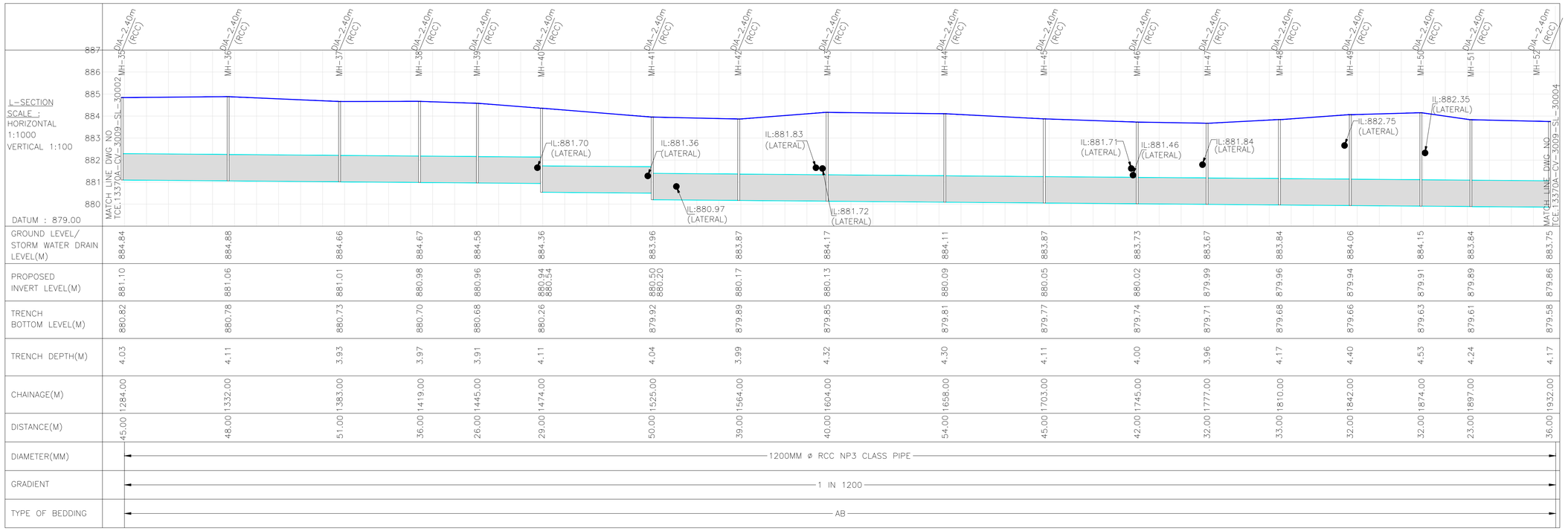
TCE FORM NO. 091 R0

TITLE: PLAN AND LONGITUDINAL SECTION OF 900/1200/1400MM DIA RCC NP3 PIPELINE FROM GURUDWARA TO ISPS AT AMARJYOTHI LAYOUT AT CHALLAGHATTA VALLEY – (SH 03 OF 07)

DWG NO







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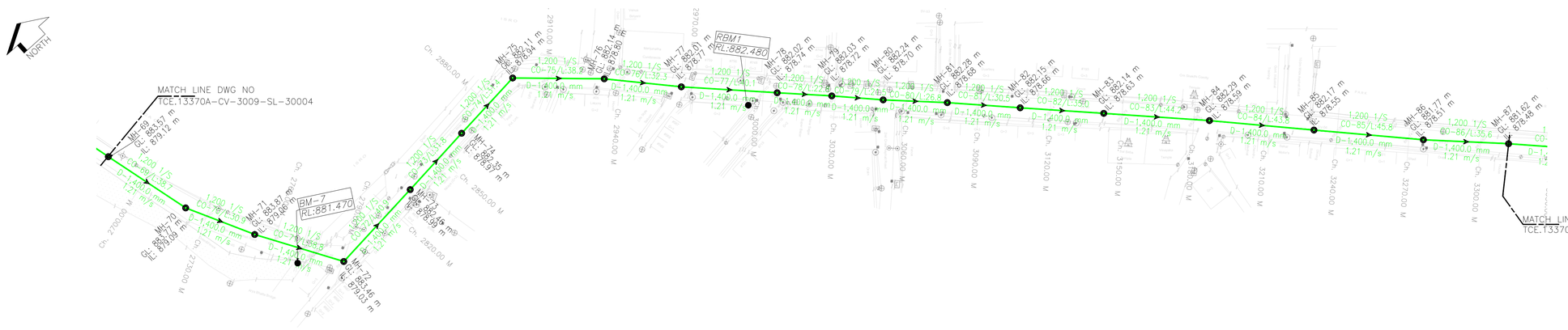
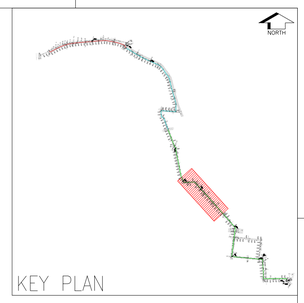
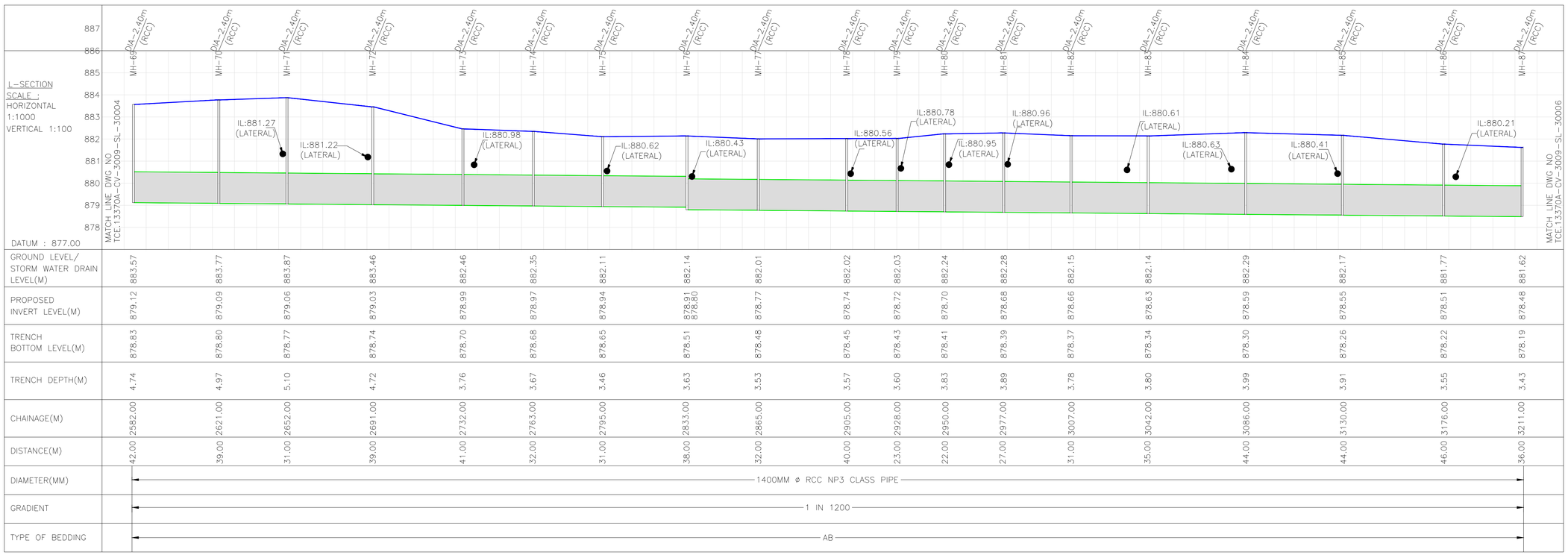
TITLE: PLAN AND LONGITUDINAL SECTION OF 900/1200/1400MM DIA RCC NP3 PIPELINE FROM GURUDWARA TO ISPS AT AMARJYOTHI LAYOUT AT CHALLAGHATTA VALLEY - (SH 05 OF 07)

DWG NO







GROUND LEVEL/ STORM WATER DRAIN LEVEL(M)	883.57	883.77	883.87	883.46	882.46	882.35	882.11	882.14	882.01	882.02	882.03	882.24	882.28	882.15	882.14	882.29	882.17	881.77	881.62					
PROPOSED INVERT LEVEL(M)	879.12	879.09	879.06	879.03	878.99	878.97	878.94	878.91 878.80	878.77	878.74	878.72	878.70	878.68	878.66	878.63	878.59	878.55	878.51	878.48					
TRENCH BOTTOM LEVEL(M)	878.83	878.80	878.77	878.74	878.70	878.68	878.65	878.51	878.48	878.45	878.43	878.41	878.39	878.37	878.34	878.30	878.26	878.22	878.19					
TRENCH DEPTH(M)	4.74	4.97	5.10	4.72	3.76	3.67	3.46	3.63	3.53	3.57	3.60	3.83	3.89	3.78	3.80	3.99	3.91	3.55	3.43					
CHAINAGE(M)	2582.00	2621.00	2652.00	2691.00	2732.00	2763.00	2795.00	2833.00	2865.00	2905.00	2928.00	2950.00	2977.00	3007.00	3042.00	3086.00	3130.00	3176.00	3211.00					
DISTANCE(M)	42.00	39.00	31.00	39.00	41.00	32.00	31.00	38.00	32.00	40.00	23.00	22.00	27.00	31.00	35.00	44.00	44.00	46.00	36.00					
DIAMETER(MM)	1400MM ø RCC NP3 CLASS PIPE																							
GRADIENT	1 IN 1200																							
TYPE OF BEDDING	AB																							

NOTES:
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE MENTIONED.
2. ALL LEVELS ARE WITH REFERENCE TO THE GTS BENCH MARK ENGRAVED ON CENTRE OF 2ND STONES ON EAST SIDE OF QUEEN VICTORIA'S STATUE IN CUBBON PARK, BANGALORE. ITS VALUE IS 912.266M.
3. TOP OF MANHOLE SHALL BE FLUSH WITH FINISHED ROAD LEVEL UNLESS NOTED.
4. BEDDING TO BE PROVIDED SHALL BE AS PER DRAWING OR AS DIRECTED BY THE ENGINEER.
5. DURING EXCAVATION IF SOIL IS FOUND TO BE UNUSUAL THE CONTRACTOR SHALL REPORT TO ENGINEER FOR DESIGNING APPROPRIATE BEDDING TO BE PROVIDED FOR PIPE.
6. ACTUAL ALIGNMENT OF SEWERS AND EXACT LOCATIONS OF MANHOLES SHALL BE AS PER SITE CONDITIONS & AS DIRECTED BY ENGINEER.
7. THE CONNECTION FROM/TO THE EXISTING MANHOLE SHALL BE DONE WITH PRIOR PERMISSION & AS DIRECTED BY THE ENGINEER,
8. IF THE TRUNK SEWER ROUTE IS PARALLEL TO DRAIN, THEN THE TOP OF MANHOLES SHOULD BE ATLEAST 0.3m ABOVE THE HFL OF THE DRAIN OR AS DIRECTED BY THE ENGINEER.
9. WORK TO PROCEED FROM LOWER IL TOWARDS HIGHER IL UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
10. ALIGNMENT FOR PIPE JACKING TO BE FINALISED BASED ON AVAILABILITY OF SPACE, IN CONSULTATION WITH THE DESIGN OFFICE.
12. VENTILATING SHAFT ARE PROVIDED AT INTERVALS FOR PRESSURE MANHOLES IN SWD.
13. DURING CONDITION ASSESSMENT, THE EXISTING MANHOLE/PIPES WERE FOUND TO BE IN GOOD CONDITION. THESE CAN BE RETAINED. HOWEWER IN FUTURE IT REQUIRED THEY CAN BE REPLACED WITH RCC NP3 PIPES OF SAME DIAMETER.
14. WHENEVER THE PIPE IS CROSSING STORM WATER DRAIN, AE BEDDING SHALL BE PROVIDED.

LEGENDS:
Alternate; Perimeter Boundary; Wire Fence
Main Power line with Pylons; Power line; Telegraph/Telephone line
Roads: Metalled; Unmetalled; Cart track; Foot path
Railway: Narrow gauge; Broad gauge
Buildings: Permanent; Temporary; Under Construction
Streams: Double line: Defined; Undefined; Singleline: Defined; Undefined
Huts: Permanent; Temporary; Well; Bore Well; Pump house; Temple; Graves
Embankment; Cutting; Quarry; Hedge
Drains: Large; Small; Forest boundary; Cultivation limit
Boulders; Rocky ground; Relative height
Sheet rock; Field bund
Trees. Ordinary; Coconut; Cactus; Casuarina; Palmyra
Bench Mark; Spot level — SNBM-56 527.780
Gps Point, Traverse Point, Bench Mark — HSZ 1126.096

ABBREVIATIONS:
EMH – EXISTING MANHOLE
ECO – EXISTING CONDUIT
CO – CONDUIT
GL – GROUND LEVEL
RCC – REINFORCED CEMENT CONCRETE
IL – INVERT LEVEL
MH – MAHOLE
L – LENGTH

LEGENDS:
PROPOSED MANHOLE (MH) —
EXISTING MANHOLE (EMH) —
PROPOSED ALIGNMENT — 1000
PROPOSED ALIGNMENT — 1400
PROPOSED ALIGNMENT — 1600
EXISTING ALIGNMENT —
GROUND LEVEL AS PER SURVEY —
STORM WATER DRAIN(SWD) — BED LEVEL
VENTILATING SHAFT —

* NOTE:
1. THE EXISTING SEWERS ARE SUFFICIENT TO CARRY SEWAGE TILL 2035. HOWEVER THE DESIGN CAN BE ADOPTED FOR PEAK SEWAGE 2050.

ENGINEERING REFERENCE DRAWINGS :
1. TYPICAL PIPE BEDDING & CROSS SECTION OF ROAD RESTORATION DRAWING TCE.10200A-CV-3009-RC-30401
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6. DETAILS OF TRENCH FOR DROP CHANNEL BETWEEN MANHOLES – TCE.10200A-CV-3009-RC-30406

CONSTRUCTION REFERENCE DRAWINGS :
–NIL–

CHALLAGHATTA VALLEY

FOR APPROVAL

DO NOT SCALE

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FILE NAME : 13370A-CV-3009-Rev-P0

	SIGN.													
	INITIALS													
	REVISIONS													
	SIGN.													
	INITIALS													
	REVISIONS													
PO	SIGN.													20-12-2023
	INITIALS	SGS	GK	RH								RH		
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME				PE/PM	APPD	DATE
					CLEARED									

BANGALORE WATER SUPPLY AND SEWERAGE BOARD
CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT FOR THE WORK OF PROVIDING AND LAYING 900/1200/1400mm DIA RCC NP-3 CLASS SEWER LINE INCLUDING TRENCHLESS TECHNOLOGY METHOD FROM M V GARDEN TO AMARJYOTHI LAYOUT ISPS DOMLURU

PLAN AND LONGITUDINAL SECTION OF 900/1200/1400MM DIA RCC NP3 PIPELINE FROM GURUDWARA TO ISPS AT AMARJYOTHI LAYOUT AT CHALLAGHATTA VALLEY – (SH 05 OF 07)

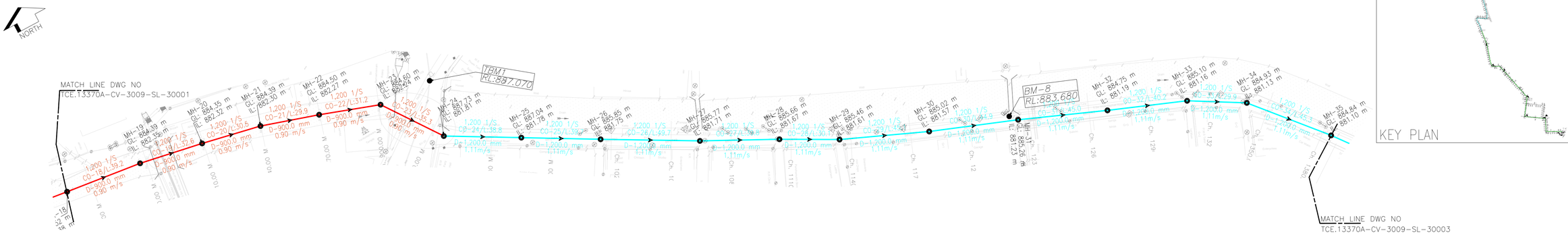
TENDER PURPOSE ONLY

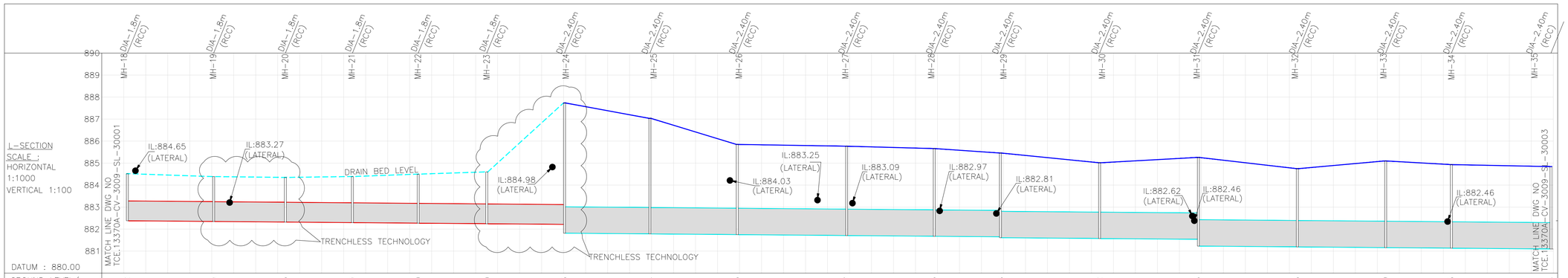
SCALE : AS SHOWN
DC & DISC: BLR & CV
DWG NO.
ISSUE P0
SIZE-A1
TCE FORM NO. 091 R0

FILE NAME: F-091-Rev-R0.dwg

TITLE: PLAN AND LONGITUDINAL SECTION OF 900/1200/1400MM DIA RCC NP3 PIPELINE FROM GURUDWARA TO ISPS AT AMARJYOTHI LAYOUT AT CHALLAGHATTA VALLEY - (SH 02 OF 07)

DWG NO





L-SECTION
SCALE :
HORIZONTAL 1:1000
VERTICAL 1:100

DATUM : 880.00

GROUND LEVEL/ STORM WATER DRAIN LEVEL(M)	884.52	884.39	884.35	884.39	884.50	884.60	887.73	887.04	885.85	885.77	885.66	885.46	885.02	885.26	884.75	885.10	884.93	884.84
PROPOSED INVERT LEVEL(M)	882.38	882.35	882.32	882.30	882.27	882.24	882.21 / 881.81	881.78	881.75	881.71	881.67	881.65 / 881.61	881.57	881.54 / 881.23	881.19	881.16	881.13	881.10
TRENCH BOTTOM LEVEL(M)	882.12	882.09	882.06	882.04	882.01	881.98	881.53	881.50	881.47	881.43	881.39	881.33	881.29	880.95	880.91	880.88	880.85	880.82
TRENCH DEPTH(M)	2.40	2.30	2.29	2.36	2.50	2.63	6.21	5.54	4.39	4.34	4.28	4.14	3.73	4.31	3.84	4.23	4.08	4.03
CHAINAGE(M)	637.00	676.00	709.00	739.00	769.00	800.00	835.00	874.00	914.00	964.00	1003.00	1034.00	1079.00	1124.00	1169.00	1209.00	1239.00	1284.00
DISTANCE(M)	39.00	39.00	33.00	31.00	30.00	31.00	35.00	39.00	40.00	50.00	40.00	30.00	45.00	45.00	45.00	40.00	30.00	45.00
DIAMETER(MM)	900MM ø RCC NP3 CLASS PIPE							1200MM ø RCC NP3 CLASS PIPE										
GRADIENT	1 IN 1200																	
TYPE OF BEDDING	AE							AB										

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LEGENDS:
PROPOSED MANHOLE (MH)
EXISTING MANHOLE (EMH)
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PROPOSED ALIGNMENT 1400
PROPOSED ALIGNMENT 1600
EXISTING ALIGNMENT
GROUND LEVEL AS PER SURVEY
STORM WATER DRAIN(SWD) BED LEVEL
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CONSTRUCTION REFERENCE DRAWINGS :
-NIL-

CHALLAGHATTA VALLEY

FOR APPROVAL

DO NOT SCALE

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	SIGN.									
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	REVISIONS									
	SIGN.									
	INITIALS									
	REVISIONS									
P0	SIGN.									
	INITIALS	SGS	GK	RH					RH	
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME	PE/PM	APPD
					CLEARED					

20-12-2023 DATE

BANGALORE WATER SUPPLY AND SEWERAGE BOARD

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT FOR THE WORK OF PROVIDING AND LAYING 900/1200/1400mm DIA RCC NP-3 CLASS SEWER LINE INCLUDING TRENCHLESS TECHNOLOGY METHOD FROM M V GARDEN TO AMARJYOTHI LAYOUT ISPS DOMLURU

PLAN AND LONGITUDINAL SECTION OF 900/1200/1400MM DIA RCC NP3 PIPELINE FROM GURUDWARA TO ISPS AT AMARJYOTHI LAYOUT AT CHALLAGHATTA VALLEY – (SH 02 OF 07)

TENDER PURPOSE ONLY

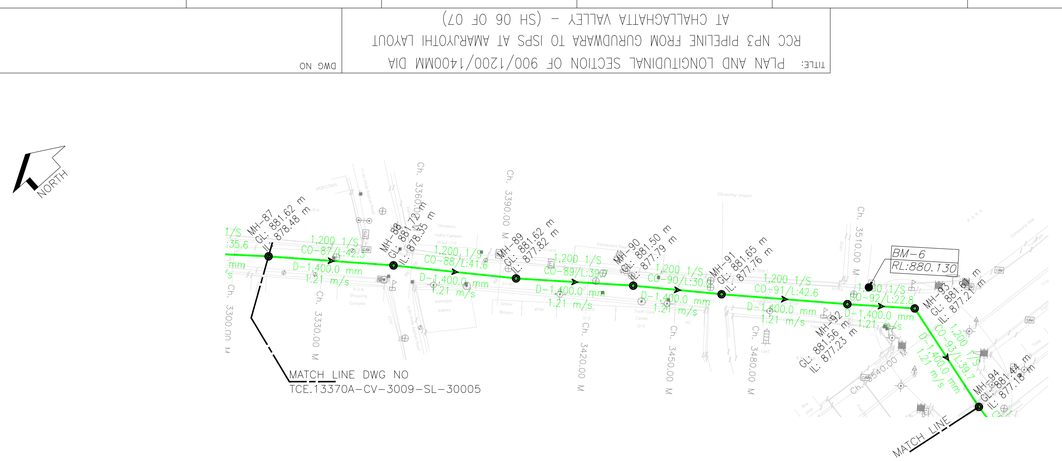
SCALE : AS SHOWN
DC & DISC: BLR & CV
DWG NO.
ISSUE P0
SIZE-A1

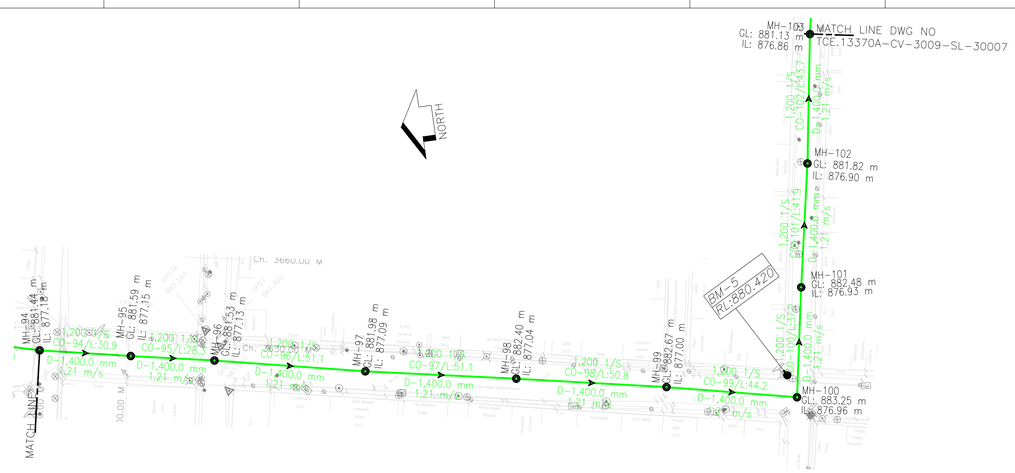
FILE NAME: F-091-Rev-R0.dwg

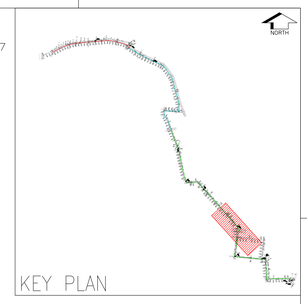
TCE FORM NO. 091 RO

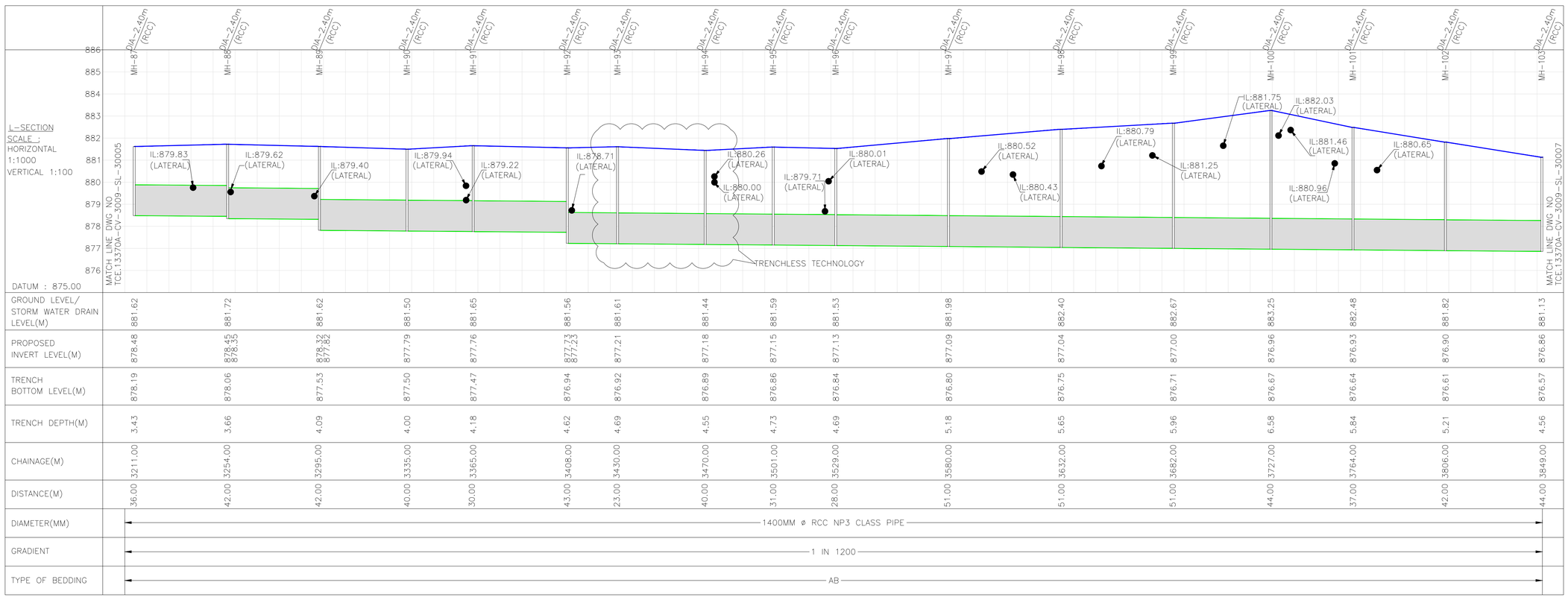
TITLE: PLAN AND LONGITUDINAL SECTION OF 900/1200/1400MM DIA RCC NP3 PIPELINE FROM GURUDWARA TO ISPS AT AMARJYOTHI LAYOUT AT CHALLAGHATTA VALLEY – (SH 06 OF 07)

DWG NO





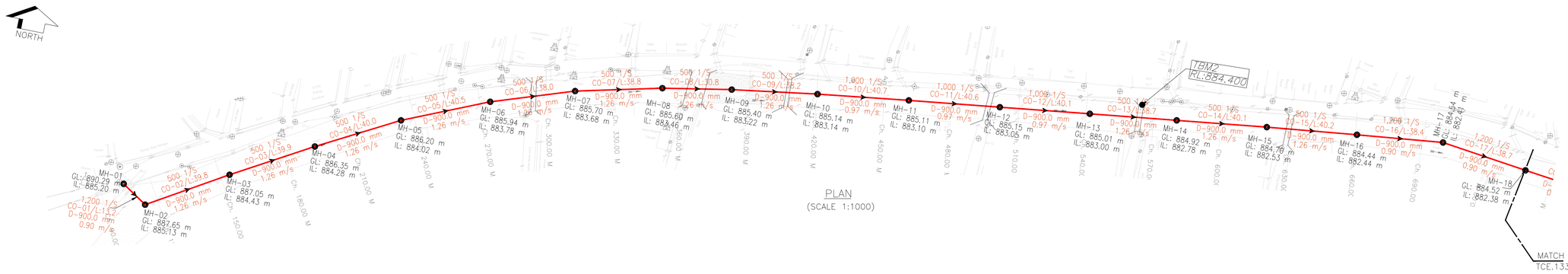




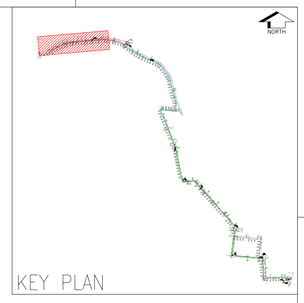
| | | |

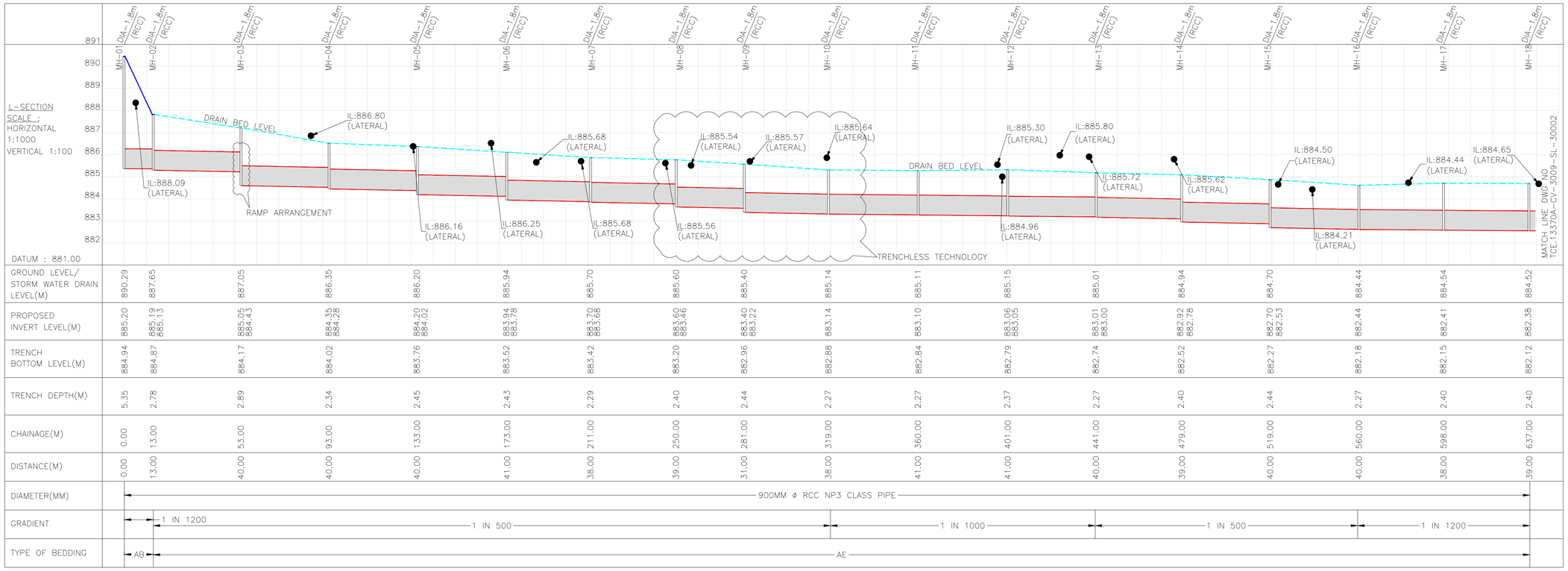
TITLE: PLAN AND LONGITUDINAL SECTION OF 900/1200/1400MM DIA RCC NP3 PIPELINE FROM GURUDWARA TO ISPS AT AMARJYOTHI LAYOUT AT CHALLAGHATTA VALLEY - (SH 01 OF 07)

DWG NO ----



PLAN
(SCALE 1:1000)





	MH-01	MH-02	MH-03	MH-04	MH-05	MH-06	MH-07	MH-08	MH-09	MH-10	MH-11	MH-12	MH-13	MH-14	MH-15	MH-16	MH-17	MH-18
GROUND LEVEL/ STORM WATER DRAIN LEVEL(M)	890.29	887.65	887.05	886.35	886.20	885.94	885.70	885.60	885.40	885.14	885.11	885.15	885.01	884.94	884.70	884.44	884.54	884.52
PROPOSED INVERT LEVEL(M)	885.20	885.19 / 885.13	885.05 / 884.43	884.35 / 884.28	884.20 / 884.02	883.94 / 883.78	883.70 / 883.68	883.60 / 883.46	883.40 / 883.22	883.14	883.10	883.06 / 883.05	883.01 / 883.00	882.92 / 882.78	882.70 / 882.53	882.44	882.41	882.38
TRENCH BOTTOM LEVEL(M)	884.94	884.87	884.17	884.02	883.76	883.52	883.42	883.20	882.96	882.88	882.84	882.79	882.74	882.52	882.27	882.18	882.15	882.12
TRENCH DEPTH(M)	5.35	2.78	2.89	2.34	2.45	2.43	2.29	2.40	2.44	2.27	2.27	2.37	2.27	2.40	2.44	2.27	2.40	2.40
CHAINAGE(M)	0.00	13.00	53.00	93.00	133.00	173.00	211.00	250.00	281.00	319.00	360.00	401.00	441.00	479.00	519.00	560.00	598.00	637.00
DISTANCE(M)	0.00	13.00	40.00	40.00	40.00	41.00	38.00	39.00	31.00	38.00	41.00	41.00	40.00	39.00	40.00	40.00	38.00	39.00
DIAMETER(MM)	900MM ø RCC NP3 CLASS PIPE																	
GRADIENT	1 IN 1200	1 IN 500						1 IN 1000						1 IN 500			1 IN 1200	
TYPE OF BEDDING	AB	AE																

NOTES:
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FILE NAME : 13370A-CV-3009-Rev-P0

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BANGALORE WATER SUPPLY AND SEWERAGE BOARD

CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT FOR THE WORK OF PROVIDING AND LAYING 900/1200/1400mm DIA RCC NP-3 CLASS SEWER LINE INCLUDING TRENCHLESS TECHNOLOGY METHOD FROM M V GARDEN TO AMARJYOTHI LAYOUT ISPS DOMLURU

PLAN AND LONGITUDINAL SECTION OF 900/1200/1400MM DIA RCC NP3 PIPELINE FROM GURUDWARA TO ISPS AT AMARJYOTHI LAYOUT AT CHALLAGHATTA VALLEY – (SH 01 OF 07)

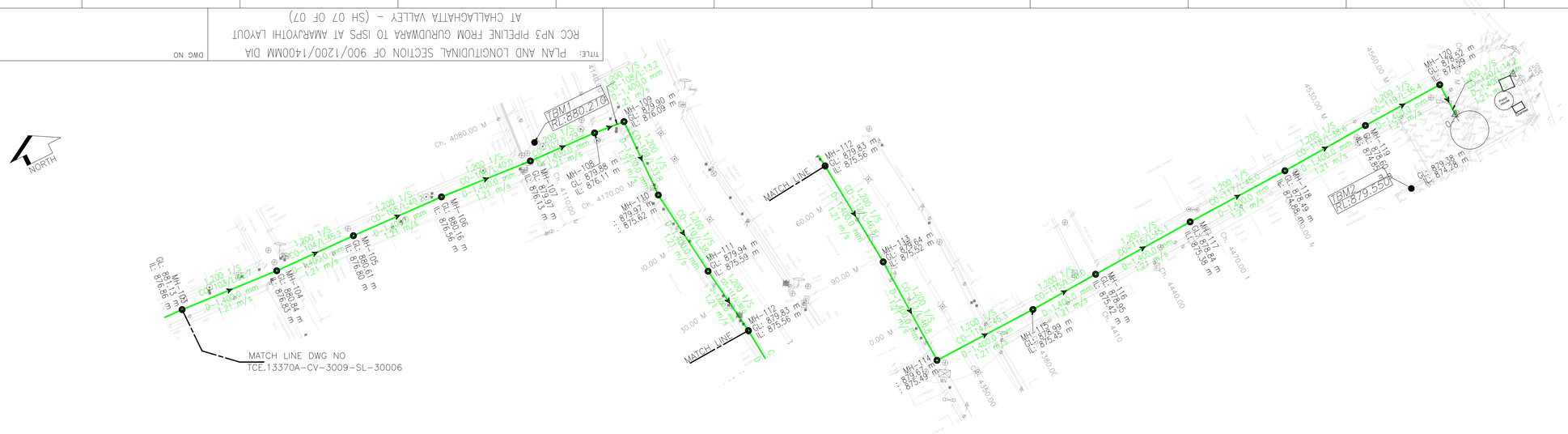
TENDER PURPOSE ONLY

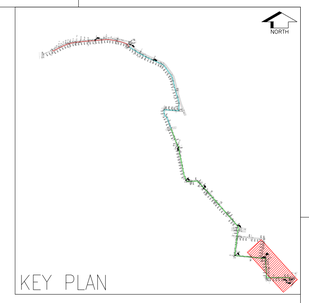
SCALE : AS SHOWN
DC & DISC: BLR & CV
DWG NO.
ISSUE P0
SIZE-A1

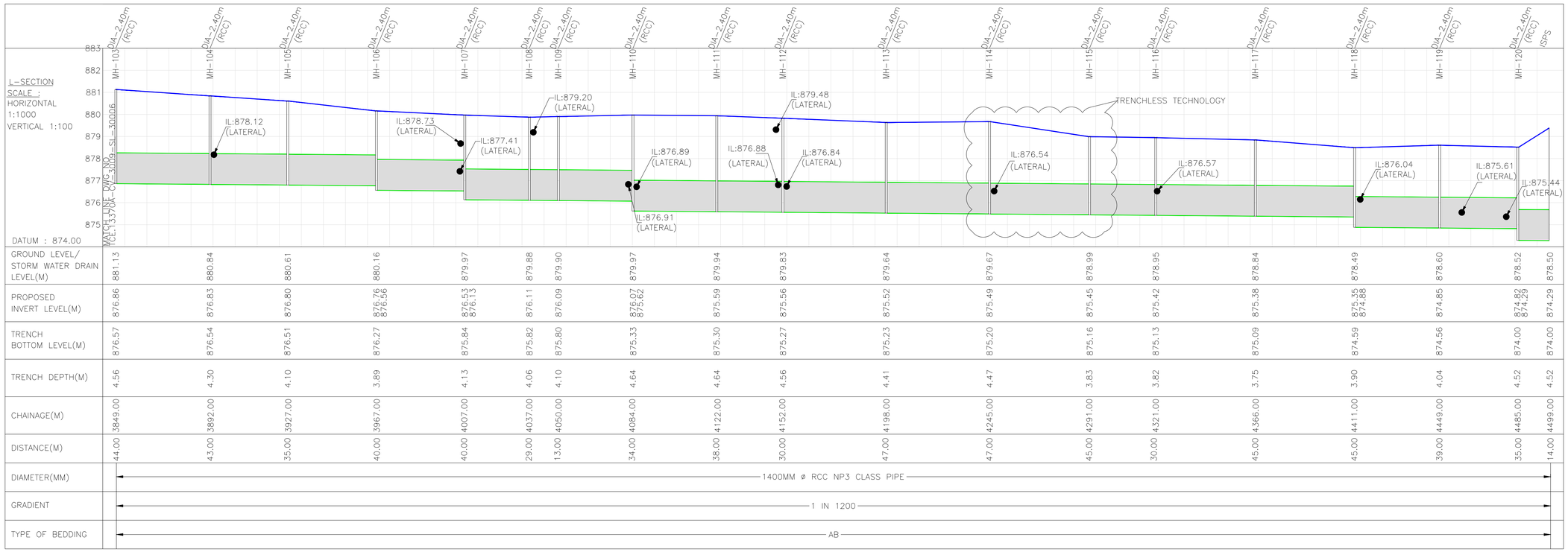
FILE NAME: F-091-Rev-R0.dwg
TCE FORM NO. 091 R0

DWG NO

TITLE: PLAN AND LONGITUDINAL SECTION OF 900/1200/1400MM DIA RCC NP3 PIPELINE FROM GURUDWARA TO ISPS AT AMARJYOTHI LAYOUT AT CHALLAGHATTA VALLEY – (SH 07 OF 07)







	MH-103	MH-104	MH-105	MH-106	MH-107	MH-108	MH-109	MH-110	MH-111	MH-112	MH-113	MH-114	MH-115	MH-116	MH-117	MH-118	MH-119	MH-120
GROUND LEVEL/ STORM WATER DRAIN LEVEL(M)	881.13	880.84	880.61	880.16	879.97	879.88	879.90	879.97	879.94	879.83	879.64	879.67	878.99	878.95	878.84	878.49	878.60	878.52 / 878.50
PROPOSED INVERT LEVEL(M)	876.86	876.83	876.80	876.76 / 876.56	876.53 / 876.13	876.11	876.09	876.07 / 875.62	875.59	875.56	875.52	875.49	875.45	875.42	875.38	875.35 / 874.88	874.85	874.82 / 874.29 / 874.29
TRENCH BOTTOM LEVEL(M)	876.57	876.54	876.51	876.27	875.84	875.82	875.80	875.33	875.30	875.27	875.23	875.20	875.16	875.13	875.09	874.59	874.56	874.00 / 874.00
TRENCH DEPTH(M)	4.56	4.30	4.10	3.89	4.13	4.06	4.10	4.64	4.64	4.56	4.41	4.47	3.83	3.82	3.75	3.90	4.04	4.52 / 4.52
CHAINAGE(M)	3849.00	3892.00	3927.00	3967.00	4007.00	4037.00	4050.00	4084.00	4122.00	4152.00	4198.00	4245.00	4291.00	4321.00	4366.00	4411.00	4449.00	4485.00 / 4499.00
DISTANCE(M)	44.00	43.00	35.00	40.00	40.00	29.00	13.00	34.00	38.00	30.00	47.00	47.00	45.00	30.00	45.00	45.00	39.00	35.00 / 14.00
DIAMETER(MM)	1400MM ø RCC NP3 CLASS PIPE																	
GRADIENT	1 IN 1200																	
TYPE OF BEDDING	AB																	

NOTES:
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE MENTIONED.
2. ALL LEVELS ARE WITH REFERENCE TO THE GTS BENCH MARK ENGRAVED ON CENTRE OF 2ND STONES ON EAST SIDE OF QUEEN VICTORIA'S STATUE IN CUBBON PARK, BANGALORE. ITS VALUE IS 912.266M.
3. TOP OF MANHOLE SHALL BE FLUSH WITH FINISHED ROAD LEVEL UNLESS NOTED.
4. BEDDING TO BE PROVIDED SHALL BE AS PER DRAWING OR AS DIRECTED BY THE ENGINEER.
5. DURING EXCAVATION IF SOIL IS FOUND TO BE UNUSUAL THE CONTRACTOR SHALL REPORT TO ENGINEER FOR DESIGNING APPROPRIATE BEDDING TO BE PROVIDED FOR PIPE.
6. ACTUAL ALIGNMENT OF SEWERS AND EXACT LOCATIONS OF MANHOLES SHALL BE AS PER SITE CONDITIONS & AS DIRECTED BY ENGINEER.
7. THE CONNECTION FROM/TO THE EXISTING MANHOLE SHALL BE DONE WITH PRIOR PERMISSION & AS DIRECTED BY THE ENGINEER,
8. IF THE TRUNK SEWER ROUTE IS PARALLEL TO DRAIN, THEN THE TOP OF MANHOLES SHOULD BE ATLEAST 0.3m ABOVE THE HFL OF THE DRAIN OR AS DIRECTED BY THE ENGINEER.
9. WORK TO PROCEED FROM LOWER IL TOWARDS HIGHER IL UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
10. ALIGNMENT FOR PIPE JACKING TO BE FINALISED BASED ON AVAILABILITY OF SPACE, IN CONSULTATION WITH THE DESIGN OFFICE.
12. VENTILATING SHAFT ARE PROVIDED AT INTERVALS FOR PRESSURE MANHOLES IN SWD.
13. DURING CONDITION ASSESSMENT, THE EXISTING MANHOLE/PIPES WERE FOUND TO BE IN GOOD CONDITION. THESE CAN BE RETAINED. HOWEWER IN FUTURE IT REQUIRED THEY CAN BE REPLACED WITH RCC NP3 PIPES OF SAME DIAMETER.
14. WHENEVER THE PIPE IS CROSSING STORM WATER DRAIN, AE BEDDING SHALL BE PROVIDED.

LEGENDS:
Alternate; Perimeter Boundary; Wire Fence
Main Power line with Pylons; Power line; Telegraph/Telephone line
Roads: Metalled; Unmetalled; Cart track; Foot path
Railway: Narrow gauge; Broad gauge
Buildings: Permanent; Temporary; Under Construction
Streams: Double line: Defined; Undefined; Singleline: Defined; Undefined
Huts: Permanent; Temporary; Well; Bore Well; Pump house; Temple; Graves
Embankment; Cutting; Quarry; Hedge
Drains: Large; Small; Forest boundary; Cultivation limit
Boulders; Rocky ground; Relative height
Sheet rock; Field bund
Trees. Ordinary; Coconut; Cactus; Casuarina; Palmyra
Bench Mark; Spot level — SNBM-56 527.780
Gps Point, Traverse Point, Bench Mark — HS2 1126.096

ABBREVIATIONS:
EMH – EXISTING MANHOLE
ECO – EXISTING CONDUIT
CO – CONDUIT
GL – GROUND LEVEL
RCC – REINFORCED CEMENT CONCRETE
IL – INVERT LEVEL
MH – MAHOLE
L – LENGTH

LEGENDS:
PROPOSED MANHOLE (MH)
EXISTING MANHOLE (EMH)
PROPOSED ALIGNMENT 1000
PROPOSED ALIGNMENT 1400
PROPOSED ALIGNMENT 1600
EXISTING ALIGNMENT
GROUND LEVEL AS PER SURVEY
STORM WATER DRAIN(SWD) BED LEVEL
VENTILATING SHAFT

* NOTE:
1. THE EXISTING SEWERS ARE SUFFICIENT TO CARRY SEWAGE TILL 2035. HOWEVER THE DESIGN CAN BE ADOPTED FOR PEAK SEWAGE 2050.

ENGINEERING REFERENCE DRAWINGS :
1. TYPICAL PIPE BEDDING & CROSS SECTION OF ROAD RESTORATION DRAWING TCE.10200A-CV-3009-RC-30401
2. TYPICAL STANDARD DETAILS OF PRECAST RCC MANHOLE – TCE.10200A-CV-3009-RC-30402
3. TYPICAL BRICK MANHOLE DRAWINGS (TYPE A & TYPE B) – TCE.10200A-CV-3009-RC-30403
4. TYPICAL BRICK MANHOLE DRAWINGS (TYPE C & TCE.10200A-CV-3009-RC-30404
5. TYPICAL DETAILS OF RCC PRESSURE MANHOLE AND VENTILATING SHAFT IN SWD – TCE.10200A-CV-3009-RC-30405
6. DETAILS OF TRENCH FOR DROP CHANNEL BETWEEN MANHOLES – TCE.10200A-CV-3009-RC-30406

CONSTRUCTION REFERENCE DRAWINGS :
–NIL–

CHALLAGHATTA VALLEY

FOR APPROVAL

DO NOT SCALE

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